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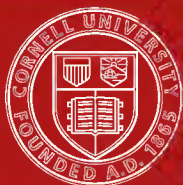
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National progress in the queen's reign,



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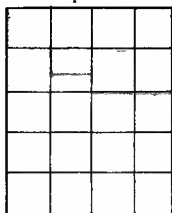
NATIONAL PROGRESS
IN THE QUEEN'S REIGN

1837-1897

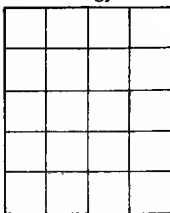
PROGRESS OF UNITED KINGDOM.

Red stands for 1840. Blue shows relative increase from 1840 till 1870; and Yellow from 1870 till 1898.

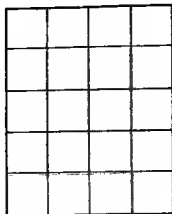
Population



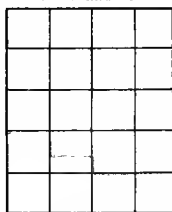
Energy



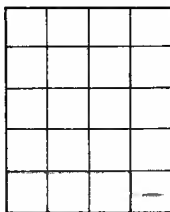
Commerce



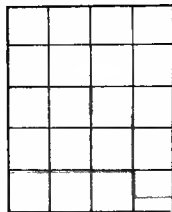
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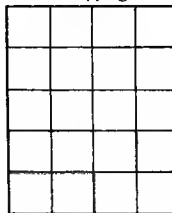
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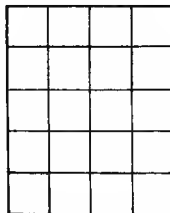
Mining



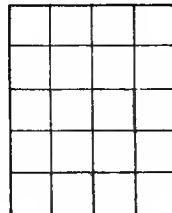
Shipping



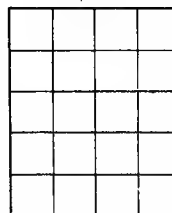
Railways



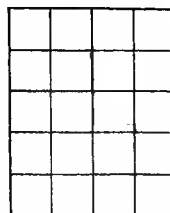
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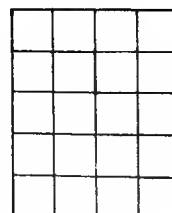
Instruction



Revenue



Wealth



NATIONAL PROGRESS

IN THE

QUEEN'S REIGN

1837-1897

BY

MICHAEL G. MULHALL

AUTHOR OF "THE DICTIONARY OF STATISTICS"

LONDON

GEORGE ROUTLEDGE AND SONS, LIMITED

BROADWAY, LUDGATE HILL

1897

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Printed by BALLANTYNE, HANSON & Co.
At the Ballantyne Press

TO THE
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THE AUTHOR

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NATIONAL PROGRESS

IN THE QUEEN'S REIGN

1837-1897

THERE is no country in Europe which has made such material progress in the last sixty years as the United Kingdom. No European statesman or economist will be found to dispute this fact. The relative advancement under the principal heads that represent the material well-being of the nation may be considered by dividing the Queen's reign into two periods, the first terminating in 1870, the second coming down to the present year, viz. :—

	1837-40.	1870.	1897.
Population	100	121	150
Commerce	100	480	623
Shipping	100	322	957
Mining	100	310	602
Textile manufactures	100	252	360
Hardware manufactures	100	430	590
Instruction	100	162	251
Agriculture	100	120	105
Revenue	100	140	195
Wealth	100	203	287
Total	<u>1,000</u>	<u>2,540</u>	<u>4,120</u>

The above table has no reference to what is termed the British Empire, since it excludes all Colonies and Possessions abroad. It shows that the United Kingdom, viewed merely as one of the European nations, has quadrupled in importance since the accession of Queen Victoria, and has increased 60 per cent. since 1870. At the same time we have no less conclusive evidence of national progress in other respects, such as the diminution of crime and of pauperism, the increased consumption of food per inhabitant, the reduction of national debt, the advancement of sanitary works, the lengthened span of human life, the enormous development of newspapers, and the astonishing increase of intellectual activity represented by the Post Office returns.

I. POPULATION.

When Her Gracious Majesty ascended the throne, the British Islands counted hardly 26 millions of inhabitants; at present the population is just 40 millions, notwithstanding the fact that more than 10 millions of our people have in the interval found new homes beyond the seas. The normal increase has been about 1 per cent. yearly, and is likely to continue in this ratio, so that by the middle of the coming century the United Kingdom will probably

count 60 million souls. Even then the population would be no more than 500 to the square mile, whereas the actual population of Belgium is much more dense; and as Belgium is one of the most prosperous countries on the Continent, there is no reason to suppose that the British Islands could not support with ease double the present number of inhabitants. The experience of mankind is, that where a nation enjoys peace and just government, the increase of population is attended with a still greater increase of industry and of all that industry brings with it for the public welfare.

The relative proportions of the three countries that make up the United Kingdom have changed during the present reign in a very remarkable manner, viz. :—

	Population.		Ratio.	
	1841.	1896.	1841.	1896.
England .	16,040,000	30,730,000	59·5	77·7
Scotland .	2,620,000	4,190,000	9·8	10·6
Ireland .	8,200,000	4,550,000	30·7	11·7
Total .	26,860,000	39,470,000	100·0	100·0

In 1841 Scotland had less than one-third of the population of Ireland, whereas at present the two countries are almost equal. The increase of population in Scotland has been attended with the happiest results, industry and wealth rising by leaps and bounds. At the same time the decline of

Ireland has been no less marked, and as the number of inhabitants decreases year by year, so does every useful occupation except the raising of cattle. There seems little likelihood of this downward march being arrested.

The outflow of emigration in sixty years has been approximately as follows:—

To	British.	Irish.	Total.
United States . . .	2,980,000	4,240,000	7,220,000
Australia . . .	1,140,000	440,000	1,580,000
Canada . . .	1,290,000	270,000	1,560,000
Total . . .	<u>5,410,000</u>	<u>4,950,000</u>	<u>10,360,000</u>

The United States took 70 per cent. of the total, while the British Colonies attracted less than 30 per cent., which was in great measure due to the very liberal nature of American legislation with regard to land, especially in the matter of Homestead grants; under this form the United States Government has already distributed 164,000,000 acres gratis among European settlers. Emigrants, as a rule, are persons of greater energy and enterprise than those who stay at home, and hence each able-bodied male or female settler is valued in the British Colonies at £200 sterling. Census reports of the United States show that the accumulation of wealth since 1870 has averaged £8 a year per inhabitant, which confirms the foregoing estimate

as to the value of each emigrant. Not all, however, of those who left our shores have remained abroad. The number of returned immigrants has much increased of late years, averaging 106,000 per annum since 1891—that is, half the number of those who emigrated.

Another remarkable feature of the present reign is the rapid growth of urban population, viz. :—

	1841.	1894.
London . . .	1,950,000	4,350,000
Manchester . . .	290,000	730,000
Glasgow . . .	260,000	690,000
Liverpool . . .	280,000	610,000
Birmingham . . .	180,000	490,000
Leeds . . .	150,000	390,000
Dublin . . .	240,000	360,000
Sheffield . . .	110,000	340,000
	<hr/>	<hr/>
Eight cities . . .	3,460,000	7,960,000

The aggregate population of the above cities shows a rise of 130 per cent., while the rest of the population rose from 23,400,000 to 30,800,000, being an increase of only 30 per cent. That is to say, urban population moved four times as fast as rural.

One of the most singular features of Great Britain is the small number of foreigners living in the island. Our trade and banking relations extend all over the Globe, our institutions offer the greatest advantages to people of other countries who claim the hospitality of our shores, not the

least of which is the exemption from military service; nevertheless there is no country of Europe where the ratio of aliens is so small. The census of 1891 showed 198,000 foreigners in England, or 6 per thousand of the population, whereas the ratio is 30 per thousand in France and 77 in Switzerland. But although the number of foreigners who make their home in Britain is very small, the benefits they have brought us are innumerable: in manufactures, science, art, &c., they have amply repaid the hospitality shown them, viz., Bessemer, Siemens, Brunel, Pugin, Marochetti, Tadema, Boehm, Max Müller, Peabody, and others.

II. COMMERCE.

British trade with foreign countries has multiplied in value sixfold in the past sixty years, the ratio per inhabitant being now £18, as compared with £4, 10s. at the beginning of the reign. Official returns show as follows:—

Period.	Yearly Average, Millions £.		
	Imports.	Exports.	Total.
1837-40 . . .	56	59	115
1861-70 . . .	270	213	483
1891-96 . . .	419	289	708

The highest year on record is 1890, when imports and exports summed up 749 millions sterling, equal

to £20 per inhabitant. Since then there has been a fall in value, the figure for 1896 being nearly 4 per cent. less, but this is due to a decline of 15 per cent. in the world's price-level. If the prices for last year were the same as in 1890, the merchandise exchanged would have represented a total of 850 millions sterling. The fall in prices has been commonly regarded in England as a misfortune: it has been said that "We are now compelled to do more work, and get less for it." This is, however, a delusion, since the fall in prices has been exceedingly profitable to us. Our imports are chiefly food and raw material, which have fallen in price more heavily than other commodities. Suffice it, meantime, to consider the fall alike in ratio as regards both imports and exports. Let us go back to 1841, and suppose that the price-level of 1841-50 remained unchanged, the account would stand thus:—

	Millions £ Sterling.			
	Official Returns.		At Prices of 1841-50.	
	Imports.	Exports.	Imports.	Exports.
1841-50 . . .	830	750	830	750
1851-60 . . .	1,530	1,210	1,484	1,174
1861-70 . . .	2,705	2,130	2,786	2,194
1871-80 . . .	3,714	2,780	3,434	2,570
1881-90 . . .	3,947	2,970	2,960	2,228
1891-96 . . .	2,514	1,734	1,676	1,156
Total . . .	15,240	11,574	13,170	10,072

Owing to the fall of prices we have paid 2070 millions less for our imports, and received 1502 millions less for our exports, than if prices had remained steady since 1850; hence the United Kingdom has gained in this way 568 millions in forty-six years, or about £12,300,000 per annum.

The preponderance of imports over exports is observed in all countries that are fairly prosperous, and when the case is reversed, as occurs in Russia, Sicily, and Ireland, it is a certain indication of poverty. Moreover, the large carrying trade of Great Britain in some manner explains why our imports are usually 50 per cent. over our exports. For example, if a merchant of Newcastle sends a cargo of coal to Odessa and exchanges it for Russian grain, the value of the latter will figure in our imports for double the amount which the coal represented in our exports. It is clear that Great Britain does not lose, as the Protectionists pretend, but is a gainer by the transaction. Hence we see that while our imports are as three to two in comparison with exports, the difference is not paid in bullion, nor the country drained of hard money.

Official tables show that the influx and the outflow of precious metals to and from the United Kingdom in a period of fifteen years down to December 31, 1895, has been as follows:—

	United Kingdom, 1881-95.		
	Millions £ Sterling.		
	Gold.	Silver.	Total.
Imported	277	141	418
Exported	221	152	373

Here we find a net importation of 45 millions sterling in the last fifteen years, or three millions per annum, which shows that our stock of bullion is not in the least diminished by what is foolishly called "an adverse balance of trade." The commerce of the United Kingdom was never on a better footing than at present, nor does that of any other country approach it in magnitude, viz. :—

	Millions £.	£ per Inhabitant.
United Kingdom	720	18·1
Germany	372	7·0
France	381	9·9
United States	317	4·4

Our commercial relations in the various quarters of the Globe have grown steadily in the last half-century, showing that the development of industry in most nations has been powerfully aided by the enterprise of British merchants. If we compare the aggregate of imports and exports in our dealings with foreign nations at three periods of the present reign, we find as follows :—

With	Millions £ Sterling.			Ratio.		
	1840.	1875.	1895.	1840.	1875.	1895.
Colonies	34	161	172	30	24	24
United States	23	95	131	20	15	19
France	6	74	68	6	11	10
Germany	5	56	60	5	8	8
Other parts	45	270	272	39	42	39
Total	113	656	703	100	100	100

The only notable changes of trade current in the last twenty years are the prodigious increase of our commerce with the United States, the best of all our customers abroad, and the decline in our dealings with France. The above table shows that our trade with the United States has risen 38 per cent. since 1875, whereas the relative increase of the whole British trade in that period has been less than 8 per cent. This proves how closely the interests of Englishmen and Americans are associated, and how desirable it is that cordial friendship should always subsist between the two nations, for the benefit of both.

The import trade of the United Kingdom may be briefly summed up thus:—

	Millions £ Sterling.		
	1854.	1885.	1895.
Grain	23	56	53
Meat and dairy produce	7	47	63
Cotton	20	37	30
Wool	7	21	27
Minerals	3	18	19
Sundries	92	192	225
Total	152	371	417

Owing to the fall of prices already mentioned, some of the above items stand for less in value now than in 1885, although the quantity imported shows a striking increase: the weight of cotton, for example, in 1895 was 24 per cent. more than in 1885. Grain in like manner shows an advance of 1,800,000 tons, while the sum paid is less by £3,000,000. On the whole, the imports of 1895 at the prices of 1885 would represent a value of 492 millions sterling—that is, 33 per cent. of increase in ten years, a rapidity of growth that shows how ill founded are the apprehensions of a decline of British trade.

It is not so easy to classify the export trade, which comprises too long a list of items for comparison, but we may take a few of the principal, viz. :—

	Millions £ Sterling.		
	1854.	1885.	1895.
Textile goods	49	108	108
Hardware	22	44	49
Coal	2	11	17
Sundries	24	50	52
Total	<hr/> 97	<hr/> 213	<hr/> 226

The above is, of course, irrespective of Colonial products passing through Great Britain, amounting usually to 60 millions per annum. Although the above table shows a rise of only 6 per cent. in

value in the last ten years, the volume of our exports has increased much more.

Take, for example, the aggregate quantity of textile goods exported, cottons, woollens, &c., viz.:—

Year.	Statute Miles.
1854 . . .	1,120,000
1885 . . .	2,820,000
1895 . . .	3,280,000

If we compare the export of textile fabrics with our population, we find that the average was 140 yards per inhabitant in 1885, and 147 yards in 1895, which shows that the productive power of our mills has grown faster than the population.

III. SHIPPING.

There is no item of national greatness which shows such relative progress as our carrying trade on the high seas: it has grown as follows:—

Year.	Tons Register.			Carrying Power.	Tons per 1000 Pop.
	Sail.	Steam.	Total.		
1840	2,480,000	90,000	2,570,000	2,840,000	108
1870	4,580,000	1,110,000	5,690,000	9,020,000	288
1895	2,870,000	6,120,000	8,990,000	27,350,000	701

The increase of carrying power has been, of course, much greater than that of nominal tonnage, since each ton of steam shipping is reckoned equivalent to four tons of sailing vessels. The transition

that has taken place in our carrying trade in the last twenty-five years is marvellous, for we find that in 1870 not quite half the business was done by steamers, whereas in 1895 steamers represented 88 per cent. of the traffic, sailing vessels only 12 per cent. Moreover, the substitution of steam for sails has greatly increased the efficiency of our seamen, viz.:—

Year.	Seamen.	Carrying Power.	Tons per Man.
1840 . . .	140,000	2,840,000	200
1870 . . .	196,000	9,020,000	460
1895 . . .	240,000	27,350,000	1,140

Thus it appears that two seamen can now do as much in carrying as five could in 1870 or twelve in 1840. That is to say, we should require 600,000 sailors to do our present trade at the rate of efficiency in 1870; and as there is an actual saving of 60 per cent., this involves a considerable reduction in freight charges, to the benefit of all nations. In 1892 more than half the carrying trade of the seas was done by British vessels, the tonnage of port entries showing as follows:—

Parts of	British.	Various.	Total.
United Kingdom . .	27,040,000	10,630,000	37,670,000
British Colonies . .	30,210,000	9,410,000	39,620,000
United States . . .	9,820,000	8,360,000	18,180,000
Other countries . .	48,280,000	76,440,000	124,720,000
Total	<u>115,350,000</u>	<u>104,840,000</u>	<u>220,190,000</u>

At present we hold about 52 per cent. of the maritime carrying trade of the world, whereas in 1840 our share was only 27 per cent. This is, of course, irrespective of Colonial shipping: between British and Colonial we might claim about 60 per cent of the total.

IV. RAILWAYS.

When the Queen ascended the throne there were but five short railways in the United Kingdom, making up in all 110 miles. The line from London to Birmingham was opened in 1838, and from that time railway construction progressed rapidly. The total paid-up capital in railways in 1870 reached 530 millions, and in December 1895 no less than 1001 millions sterling, while the market value of the stock in the latter year exceeded 1500 millions. If we compare the paid-up capital with population in the three kingdoms, we find as follows:—

	£ Sterling.	Population.	£ per Head.
England . . .	825,200,000	30,600,000	27·0
Scotland . . .	136,600,000	4,170,000	32·7
Ireland . . .	39,300,000	4,560,000	8·6
U. Kingdom . .	<u>1,001,100,000</u>	<u>39,330,000</u>	25·4

It is to be regretted that a much larger sum has not been invested in the construction of rail-

ways in Ireland, the above table showing that Scotland has $13\frac{1}{2}$ per cent., Ireland less than 4 per cent. of the total.

Taking merely the island of Great Britain, we find that its mileage of railways is very high in proportion to area, but not to population:—

	Miles Open (1895).	Miles per	
		Million Acres.	Million Inhabitants.
Great Britain	18,000	310	510
France	24,970	192	650
Germany	27,850	210	530
Russia	23,100	18	220
United States	180,000	93	2,550
Canada	16,000	8	3,100
Australia	13,820	7	3,280

Compared with population the railways of Great Britain do not seem to provide sufficient accommodation: to be on a par with France in this respect we require in this island (irrespective of Ireland) at least 5000 miles more than at present. So tremendous, however, is the power wielded by the principal railway companies of England, that the national interests are completely at their mercy: they have, moreover, strengthened their monopoly by getting possession of the principal canals.

V. ENERGY.

The working power or energy of the United Kingdom has multiplied sixfold in the present reign, viz. :—

Year.	Millions of Foot-tons Daily.			
	Hand.	Horse.	Steam.	Total.
1840 . .	2,220	5,100	2,400	9,720
1870 . .	2,700	5,600	15,750	24,050
1895 . .	3,200	6,330	51,880	61,410

The average of energy to each inhabitant is now 1570 foot-tons against 370 in 1840—that is to say, one man can do as much work at present as would have required four men in 1840. Meantime it must be observed that three-fourths of our work in 1895 was distributive—that is, transport—whereas in 1840 nearly two-thirds was productive, viz. :—

Year.	Millions of Foot-tons Daily.		
	Productive.	Distributive.	Total.
1840 . . .	6,270	3,450	9,720
1895 . . .	15,160	46,250	61,410

If we were to consider only productive energy, we should find that the ratio has risen from 240 to 390 foot-tons per inhabitant; but this would give a wholly inadequate idea of the growth of

our working-power, since the carrying trade of the world, as already shown, is rapidly passing into our hands. The shares of energy that correspond to the three kingdoms are by no means in keeping with population, the ratio of Scotland being again very high, that of Ireland the reverse, viz. :—

	Millions of Foot-tons Daily.			Foot-tons per Inhabitant.
	Animal.	Steam.	Total.	
England .	6,500	41,400	47,900	1,570
Scotland .	960	8,620	9,580	2,300
Ireland .	2,070	1,860	3,930	860
U. Kingdom	9,530	51,880	61,410	1,570

It appears from the above table that the preponderance of energy in North Britain is so great that two Scotchmen can do as much as three English or five Irish. This is not surprising when we see that 90 per cent. of all work in Scotland is done by steam, 86 per cent. in England, and only 47 per cent. in Ireland. No efforts to regenerate or improve Ireland can be of much avail until the steam-power of that country is doubled, especially in the matter of railways.

The steam-power of the United Kingdom used in factories, mines, &c., has grown sixfold, that in railways and steamers forty-three-fold, since 1840, viz. :—

	Horse-power.	
	1840.	1895.
Fixed	350,000	2,200,000
Locomotives	180,000	4,800,000
Steamboats	70,000	5,970,000
Total	<u>600,000</u>	<u>12,970,000</u>

The increase of steam-power since 1840 has averaged 220,000 horse per annum, and this has not only tended to an enormous development of our working-power, but also served to diminish materially the cost of production and transport, and thus been the main cause of a fall in prices.

It is estimated by economists that steam does its work at one-third of the cost of horse-labour, and that hand-labour is ten times dearer than what is done by horse ; in other words, that one million foot-tons of energy by hand costs as much as 30 millions by steam. The proportions in which work has been done at different dates in the United Kingdom were as follows :—

	1840.	1870.	1895.
Hand	22·8	11·2	5·2
Horse	52·5	23·3	10·3
Steam	24·7	65·5	84·5
Total	<u>100·0</u>	<u>100·0</u>	<u>100·0</u>

We can easily arrive at the cost of energy or working-power at the above three periods by estimating manual labour at 30 pence daily, the main-

tenance of a horse at the same, and the cost of steam at one shilling per horse-power daily. The account will stand thus:—

	1840. £	1870. £	1895. £
Hand . . .	920,000	1,120,000	1,370,000
Horse . . .	210,000	230,000	260,000
Steam . . .	30,000	190,000	650,000
Total . . .	<u>1,160,000</u>	<u>1,540,000</u>	<u>2,280,000</u>

The total cost of energy has only doubled since 1840, while the working-power, as already shown, has grown more than sixfold; that is to say, our labour, whether productive or distributive, costs relatively one-third of what it did in 1840. This is shown more clearly in the following table:—

	Millions of Foot-tons.	Daily Cost, £.	Pence per Thousand Foot-tons.
1840 . . .	9,720	1,160,000	28·7
1870 . . .	24,050	1,540,000	15·4
1895 . . .	61,410	2,280,000	8·9

Our superiority in steam over all other European nations gives us an immense advantage. It enables us to work cheaper, even though we pay higher wages to our operatives, and at the same time gives us a working-power in excess of what would otherwise correspond to our population. The following

table shows the amount and the cost of energy in various countries:—

	Millions of Foot-tons.			Cost Daily, £.	Pence per 1000 Ft.-tons.
	Animal.	Steam.	Total.		
England .	6,500	41,400	47,900	1,740,000	8·7
Scotland .	960	8,620	9,580	275,000	6·9
Ireland .	2,070	1,860	3,930	265,000	16·1
U. Kingdom	9,530	51,880	61,410	2,280,000	8·9
France .	12,800	19,660	32,460	1,740,000	12·8
Germany .	15,760	30,600	46,360	1,910,000	9·9
Austria .	14,330	9,560	23,790	1,430,000	14·4
Italy .	6,750	5,480	12,230	970,000	19·0

The working-power of the United Kingdom is double that of France, and nearly as much as the aggregate of the German and Austrian Empires, whose united population reaches 95,000,000 souls. What we gain by cheapness of energy is almost incredible. If the cost were as in France (nearly 13 pence per thousand foot-tons), it would amount to £3,285,000, or one million sterling per day more than the actual sum. And yet there is room for improvement. If all the energy of the United Kingdom could be obtained at the Scotch rate, it would reduce the cost to £1,770,000, being a saving of £510,000 daily. Meantime, taking the English rate of $8\frac{3}{4}$ pence as a standard, we find that the

excessive cost of energy in certain other countries entails the following losses :—

	£ Daily.	£ per Annum.
France . . .	560,000	168,000,000
Germany . . .	230,000	69,000,000
Austria . . .	570,000	171,000,000
Italy . . .	520,000	156,000,000

The above four countries in the aggregate lose two million pounds sterling daily for want of sufficient steam-power. The following table shows the ratios of animal and steam energy to population in the countries alluded to :—

	Foot-tons Daily per Inhabitant.		
	Animal.	Steam.	Total.
England	210	1,360	1,570
Scotland	230	2,070	2,300
Ireland	455	405	860
France	336	510	846
Germany	305	595	900
Austria	335	225	560
Italy	225	185	410
United States . .	880	970	1,850

In the ratio of steam-power to population no country approaches Scotland. Two Scotchmen can command as much steam-power as 3 Englishmen, 4 Americans, 7 Germans, 8 French, 10 Irish, 18

Austrians, or 22 Italians. The steam-power of the United Kingdom in 1895 was approximately as follows:—

	Horse-power.		
	England.	Scotland.	Ireland.
Fixed . .	1,740,000	315,000	145,000
Railway . .	4,100,000	510,000	190,000
Steamboats .	4,510,000	1,330,000	130,000
Total . .	10,350,000	2,155,000	465,000

This makes up a total of 12,970,000 horse-power, equal to 51,880 millions of foot-tons daily, each horse-power of steam counting as 4000 foot-tons, or the energy of 13 men. Thus our steam-power in the United Kingdom is equal to the force of 169,000,000 able-bodied men, a number greater than the whole population of Europe could supply. This prodigious number of men, even at two shillings daily wages, would cost £16,900,000, instead of £650,000 which the steam-power actually costs, so that we find here a saving of 16 millions sterling daily, thanks to the march of mechanical science. As soon as other nations come to command steam-power as freely as we do, there will be room to doubt whether Great Britain can maintain a foremost place; but half a century is likely to elapse before then.

VI. AGRICULTURE.

This is the only important branch of industry in which we have made no progress in the last sixty years. When Queen Victoria was proclaimed, in 1837, we grew as much wheat as fed our people eleven months in the year: at present the United Kingdom does not raise enough for $2\frac{1}{2}$ months' supply. Agriculture has been for many years unprofitable to all concerned in it, and as capital has an irresistible tendency to run out of losing trades, we must not be surprised to find that the business of farming has declined. Notwithstanding the adoption of Free Trade in 1846, agricultural capital and products increased steadily in value till 1878, but since the latter year farming interests have declined so rapidly that there has been a loss of 450 millions sterling, viz. :—

	Capital, Millions £.		
	1846.	1880.	1895.
Land . . .	1,705	2,086	1,686
Cattle . . .	150	209	202
Sundries . . .	185	230	189
Total . . .	2,040	2,525	2,077

In the above table the value of land is taken at thirty times the assessed annual rental, which is

probably more than it would now realise. The loss of agricultural capital since 1880 has averaged 30 millions a year, but the increase of wealth in all other pursuits has been so steady and uniform that the bulk of the nation has regarded such loss with philosophic equanimity. If we consider the subject from a purely economic point of view, a continuance of the present system is most desirable for Great Britain, however bad for Ireland.

There are, nevertheless, thousands of arm-chair politicians who cannot reflect without apprehension on the fact that we are dependent on foreign countries for our bread supply. Some even entertain the idea that the progressive ruin of Ireland may come ultimately to affect Great Britain; but these are so few in number as not to cause a general feeling of anxiety.

The consumption of wheat in the United Kingdom since 1837 has been as follows :—

Period.	Tons Yearly.		
	Native.	Imported.	Total.
1837-40 . .	2,800,000	250,000	3,050,000
1861-70 . .	2,720,000	1,810,000	4,530,000
1891-95 . .	1,270,000	4,800,000	6,070,000

There has not been such a falling-off in the production of any other kind of grain as in

wheat. Production and consumption are shown as follows:—

Period.	Millions of Bushels Yearly.				
	Production.			Imported	Total
	Wheat.	Oats, &c.	Total.			all Grain.	Consumption.
1841-50 . . .	115	230	345	31	376
1861-70 . . .	109	250	359	126	485
1891-95 . . .	51	244	295	348	643

At present we import 35 per cent. of all grain consumed, whereas before the Crimean War our imports were under 10 per cent. Meantime there has been such a fall in prices that farmers have felt the pressure of hard times, viz. :—

	Shillings per Quarter.			Price-level.			
	Wheat.	Barley.	Oats.	Wheat.	Barley.	Oats.	Average.
1857 . . .	56	42	25	100	100	100	100
1877 . . .	57	40	26	102	95	104	100
1887 . . .	33	25	16	59	60	64	61
1895 . . .	23	22	15	41	52	60	51

Prices in 1877 were on the same level all round as twenty years before, but there has been a fall of 49 per cent. since 1877, which has been such a serious blow to tillage, that the total area under crops is now two million acres less than in 1846, viz. :—

	Acres.	
	1846.	1895.
England . . .	13,300,000	12,550,000
Scotland . . .	3,390,000	3,510,000
Ireland . . .	5,240,000	3,990,000
United Kingdom . . .	21,930,000	20,050,000

At the same time there has been a considerable increase in pastoral industry, the area under grass being now five million acres more than it was then, viz.:—

	Acres.	
	1846.	1895.
Crops	21,930,000	20,050,000
Grass	22,940,000	27,830,000
Total	44,870,000	47,880,000

It has, therefore, come to pass that the value of pastoral products has increased so much as to exceed that of crops, whereas in 1846 crops formed two-thirds of the gross farming products. M'Culloch estimated the annual value of products in 1846 at £218,000,000, Caird in 1878 at £261,000,000, but there has been such a fall since the latter year that the value in 1895 did not exceed £230,000,000. We have already seen that the landowners have lost 30 millions per annum since 1880, and from Caird's statement it appears that the tenants like-

wise lose 31 millions a year. The values in 1895 were approximately as follows:—

	G. Britain, £.	Ireland, £.	U. Kingdom, £.
Grain . . .	31,800,000	6,400,000	38,200,000
Hay and straw . . .	33,000,000	11,000,000	44,000,000
Green crops . . .	33,200,000	10,600,000	43,800,000
Meat . . .	40,600,000	14,600,000	55,200,000
Dairy, &c. . .	36,400,000	12,400,000	48,800,000
Total . . .	175,000,000	55,000,000	230,000,000

The gross farming product in England in 1895 averaged 132 shillings per acre of tillage, and 84 shillings of pasture. An estimate was published in 1888 to show that the cost of working a farm of 100 acres in England, 40 arable, and 60 pasture, was 13 per cent. less than in the time of the war against Bonaparte, viz. :—

	1813, £.	1888, £.
Rent	118	120
Taxes	70	42
Team	99	100
Labour, &c.	239	188
Total	526	450

The gross product of such a farm in 1895 would have been :—

	Acres.	£.
Tillage	40	264
Pasture	60	252
Total	100	516

This would leave a balance of £66, say 25 shillings a week, for support of the farmer and his family, a very poor return for a man with an invested capital of at least £600. A journeyman carpenter or painter would earn more. The above figures, of course, apply to England, but in Ireland the margin of profit would be less (even though expenses be less), as the gross product averages only 72 shillings, against 106 shillings per acre in England.

There is only one favourable feature as regards farming in the United Kingdom, namely, that machinery effects such a saving of labour as to give a higher average value of products to each farm-hand, viz. :—

Year	Hands.	Product, £.	£per Hand.
1846 . . .	3,519,000	218,000,000	62
1895 . . .	2,527,000	230,000,000	91

This shows that two farm-hands now produce as much as three did fifty years ago. But it does not follow that the tenant-farmer is much the gainer, for Sir James Caird has shown that wages have risen from 19 pence to 30 pence daily for ordinary farm-labourers. As the numbers in the preceding table include boys and women, and as wages in Ireland are lower than in England, we may take the average wages all round at two-thirds

of Caird's figures for both dates, and then the cost of farm labour in the United Kingdom will come out as follows:—

	Hands.	Pence Daily.	£ per Annum.
1846 . . .	3,519,000	12½	56,700,000
1895 . . .	2,527,000	20	65,300,000

Notwithstanding the use of machinery and saving of hands, the farmer has now to pay 27 shillings an acre for labour, against 25 shillings in 1846. The productive area, as shown at page 26, has increased 7½ per cent., but the bill for labour has risen £8,600,000 or 15 per cent., so that the farmer is in this respect worse off than he was fifty years ago. There has been at the same time a great increase of rates and taxes on farmers, as shown by the following statement published in 1890 for the United Kingdom, based on Mr. Goschen's inquiry:—

	1846, £.	1890, £.
Tithes	3,010,000	4,050,000
Rates	5,300,000	11,800,000
Taxes	3,900,000	4,950,000
Total	<u>12,210,000</u>	<u>20,800,000</u>
England	10,160,000	16,200,000
Scotland	950,000	1,900,000
Ireland	1,100,000	2,700,000
Total	<u>12,210,000</u>	<u>20,800,000</u>

The increase in forty-four years was 60 per cent. in England, 100 per cent. in Scotland, and 145 per cent. in Ireland, making altogether an additional burthen of £8,600,000 on agricultural industry. In view of these fresh burthens, of the fall in agricultural prices, and the rise in wages, Sir James Caird predicted in 1878 that British farming would soon have to pass through an epoch of severe trial, unless a great reduction of rents were to take place. Many landowners in England made generous abatements, others foolishly allowed farms to lie derelict; and as regards Ireland, the new Land Court has reduced the rents of half the kingdom by exactly 20 per cent (from £5,980,000 to £4,740,000). Nevertheless the land-rental of the United Kingdom is higher now than it was in 1846, for although England shows a reduction, owing to the greater humanity of the landowners, there has been a marked rise in Scotland and Ireland, as the official figures show:—

	1846. £.	1895. £.	Increase. £.
England . . .	40,200,000	39,630,000	...
Scotland . . .	5,600,000	6,195,000	595,000
Ireland . . .	8,630,000	9,895,000	1,265,000
U. Kingdom . .	54,430,000	55,720,000	...

In view of the foregoing facts, it is not surprising that agriculture has lost ground, nor that every

workhouse in England contains among its inmates a number of men who were once thriving farmers. Rather must we wonder that farming has survived. But the position is still one of such trial that it is likely tillage will continue in its downward course, until the British Islands become one vast grazing farm. The cost of labour, as already shown, averages for the United Kingdom 27 shillings per productive acre—say 30 shillings in Great Britain, and 21 shillings in Ireland; let us add together rent, taxes, and labour, 30 shillings an acre all round, and allow for team and sundries,* whereupon the account will stand thus:—

	Great Britain. £.	Ireland. £.	U. Kingdom. £.
Rent . . .	45,800,000	9,900,000	55,700,000
Taxes . . .	18,100,000	2,700,000	20,800,000
Labour . . .	49,200,000	16,100,000	65,300,008
Team, &c. . .	49,200,000	22,800,000	72,000,000
Expenses . . .	162,300,000	51,500,000	213,800,000

If we deduct the above expenses from the value of products, the result will be as follows:—

	Product. £.	Expenses. £.	Nett. £.
Great Britain . . .	175,000,000	162,300,000	12,700,000
Ireland . . .	55,000,000	51,500,000	3,500,000
U. Kingdom . . .	230,000,000	213,800,000	16,200,000

* According to the estimate in 1888, already mentioned, team and sundries are put down at 32 shillings an acre.

This leaves a margin of 8 shillings an acre in Great Britain and $4\frac{1}{2}$ shillings in Ireland. That is to say, a tenant-farmer holding 50 acres would have £20 a year surplus in Great Britain, or £11 in Ireland.

VII. TEXTILE MANUFACTURES.

This branch of industry has nearly quadrupled during the present reign, as appears from the consumption of fibre, viz. :—

	Millions of Lbs.		
	1840.	1870.	1896.
Cotton	448	1,101	1,570
Wool	129	278	590
Flax and hemp . .	277	451	370
Jute . . . .	...	324	540
Total	854	2,154	3,070

The weight of fibre consumed was equal to 33 lbs. per inhabitant in 1840, and at present reaches 77 lbs. In the history of mankind there has never been such a development of textile industry, for we may be said to clothe one-fourth of the human race. If we compare the consumption of fibre with population in various countries we find as follows :—

	Tons Fibre.	Population.	Lbs. per Inhabitant.
United Kingdom .	1,370,000	39,500,000	77
France	530,000	38,600,000	30
Germany	532,000	52,500,000	23
Austria	370,000	42,000,000	20
U. States	950,000	70,700,000	30
Other countries .	1,528,000	...	...
Total	<u>5,280,000</u>		

It appears, therefore, that our mills consume one-fourth of all the fibre that the world produces. Their consumption averages close on 5000 tons daily; and such has been the improvement of machinery during the present reign, that two operatives now consume more fibre than three did sixty years ago, viz. :—

Year.	Operatives.	Tons Fibre.	Lbs. per Operative.
1835	353,000	282,000	1,780
1850	596,000	510,000	1,902
1896	1,085,000	1,370,000	2,830

There is a saving of 35 per cent. in the number of hands, and consequently a considerable diminution in the cost of production and a fall in price, to the great benefit of consumers all over the world, without any loss or injury to the manufacturers. Comparing the weight of fibre consumed last year in our mills with the figures for 1870, we find that in twenty-six years our cotton industry has

increased 40 per cent., our woollen 105 per cent.

Cotton Goods.—The output of our mills in 1840 was about 830,000 statute miles of cotton cloth, and in 1895 it reached 4,200,000 miles; it has nearly doubled since 1860, the consumption being shown as follows:—

	English Statute Miles.	
	1860.	1895.
United Kingdom . . .	790,000	1,320,000
India and China . . .	656,000	1,410,000
Other countries . . .	924,000	1,470,000
Total . . .	<u>2,370,000</u>	<u>4,200,000</u>

The net value of this industry to Great Britain is enormous. If we deduct the amount paid for raw cotton since 1840 from the approximate value of goods manufactured, the balance will represent the amount earned by the mills, to be divided between owners and operatives, viz. :—

Period.	Millions £.		
	Raw Cotton.	Manufactures.	Net Result.
1841-50 . . .	110	363	253
1851-60 . . .	242	562	320
1861-70 . . .	431	830	399
1871-80 . . .	389	1,020	631
1881-90 . . .	371	1,096	725
1891-95 . . .	158	480	322
Fifty-five years	<u>1,701</u>	<u>4,351</u>	<u>2,650</u>

Since 1870 the balance remaining for mill-owners and their hands has ranged between 60 and 75 millions sterling per annum. The annual output of the mills was estimated in 1887 by Ellison at £101,400,000, whereas Baines's estimate in 1833 did not exceed £31,300,000. Owing to improved machinery and economy in working, the price of calico has fallen in late years.

The mills turn out daily 14,000 miles of cotton cloth, and the sum paid daily for wages is £100,000. Home consumption averages 4000 miles, and the shipments for other countries 10,000 miles of cloth daily.

Woolens.—This branch of trade is evidently in a very prosperous condition, our mills now consuming five times as much wool as when the Queen ascended the throne. To go back no further than 1840 we find:—

	Tons of Wool Consumed.		
	1840.	1870.	1896.
British . . .	37,000	55,000	53,000
Imported . . .	21,000	69,000	212,000
Total . . .	58,000	124,000	265,000

Fifty years ago the bulk of the wool was native-grown, but the industry has advanced with such rapid strides that our mills now draw four-fifths of their supply from Australia and other remote parts

of the world. The prodigious development of this branch of manufacture has been materially aided by two causes: first, the great fall in the price of wool; secondly, the improvement of machinery and economy of labour. In 1840 wool averaged 28 pence, in 1895 only 8½ pence, per pound, being a fall of 70 per cent. If we compare the aggregate number of operatives in woollen, worsted, and shoddy factories with the consumption of wool at present, it gives an average of 1700 lbs. to each hand, against 1360 lbs. in the year 1870; that is to say, three operatives now do as much work as four did twenty-six years ago, which is a saving of 25 per cent. in labour. The output of the mills is about 62 millions sterling per annum: it was valued by Behrens of Bradford in 1886 at £60,400,000. The trade of 1895 was approximately as follows:—

	£
Home use	34,800,000
Exported	26,900,000
	<hr/>
Total	61,700,000

The output averages £205 per operative, as compared with £175 in the cotton industry. The difference between the cost of wool consumed and the value of goods manufactured is at present about 42 millions sterling per annum, and the sum paid for wages is over £50,000 a day. If we strike an

approximate balance-sheet of the woollen trade since 1840, it will stand thus:—

Period.	Manufactures, Millions £.			Cost of Wool, Millions £.
	Home Use.	Exports.	Total.	
1841-50 . . .	201	79	280	111
1851-60 . . .	238	128	366	135
1861-70 . . .	271	237	508	165
1871-80 . . .	293	262	555	185
1881-90 . . .	298	223	521	198
1891-95 . . .	171	123	294	99
Fifty-five years . . .	1,472	1,052	2,524	893

The sum received by the nation for woollen exports in the last fifty-five years was considerably more than the cost of wool (British and foreign) consumed in the mills during that period. The value of woollen goods consumed at home stands for the earnings of operatives, the profits of mill-owners, the cost of coal used in the mills, and other incidental expenses. Besides our home consumption of more than 30 millions sterling, we use foreign woollen goods to the value of 10 millions yearly, so that our total home use exceeds 40 millions sterling per annum. In fact, in 1895 we consumed woollens to the value of 23 shillings per inhabitant, as compared with 14 shillings in the earlier years of the Queen's reign.

Linens.—This industry makes little or no headway, the consumption of fibre being the same now as forty-five years ago, viz. :—

	Tons of Flax.	
	1850.	1895.
Irish . . .	21,000	12,000
Foreign	89,000	100,000
Total . . .	110,000	112,000

On the outbreak of the American civil war in 1861, which interrupted the cotton trade, a great impulse was occasioned to linen manufacture, but the effect passed away some ten years later. Our exports fell to low-water mark in 1885, namely, 150 million yards, since which time there has been a slight recovery, the average export for 1894–95–96 reaching 177 million yards. Home consumption is at present about 5 yards yearly per inhabitant, as compared with 8 yards in 1840, the use of Crimean or woollen shirts having greatly superseded that of linen ones. The output of the mills shows a value of about £13,000,000 per annum, and linen exports figure for half that amount. The mills employ 108,000 hands, and the product is equal to £120 per hand, against £175 in cotton-mills. The following is an approximate balance-sheet of the linen industry for fifty-five years :—

Period.	Manufactures, Millions £.			Cost of Flax. Millions £.
	Home Use.	Exports.	Total.	
1841-50 . . .	72	45	117	58
1851-60 . . .	71	57	128	47
1861-70 . . .	70	95	165	60
1871-80 . . .	88	82	170	57
1881-90 . . .	60	62	122	40
1891-95 . . .	32	32	64	20
Fifty-five years .	393	373	766	282

The net value of linen manufactures over and above the cost of flax during the present reign has been just 500 millions sterling, or nearly $8\frac{1}{2}$ millions a year—that is, about one-fifth of the net value of our woollen industry.

Jute and Hemp.—Jute is a new item of manufacture, which first came into notice about 1850, the consumption in that year amounting to no more than 20,000 tons, or one-twelfth of what it is at present. Taking jute and hemp together, the consumption in the mills shows thus:—

	1840.	1870.	1896.
Hemp, tons . . .	30,000	70,000	55,000
Jute, „ . . .	...	140,000	240,000
Total . . .	30,000	210,000	295,000

The consumption is now ten times as much as in 1840, and the value of goods manufactured exceeds

15 millions sterling per annum, Dundee being the principal seat of this industry.

Silk.—During the early portion of the Queen's reign this branch of manufacture was so prosperous that the consumption of raw silk rose from 5½ million lbs. in 1837 to 11 millions in 1857, but since the latter year it has steadily declined: at present it hardly reaches 3 million lbs. The output of silk goods ranges from £5,000,000 to £6,000,000 per annum, besides which we consume foreign silks worth £13,000,000. The total consumption of silk goods in the United Kingdom is equal to 10 shillings per inhabitant, the same as in France.

Summing up all textile manufactures since 1840, we find the result approximately as follows:—

Period	Millions £ Sterling.		
	Make.	Export.	Home Use.
1841-50	905	381	524
1851-60 .	1,299	584	715
1861-70 .	1,749	954	795
1871-80 . .	2,009	1,107	902
1881-90	1,978	1,102	876
1891-95 . .	947	448	499
Fifty-five years	8,887	4,576	4,311

Before 1860 the home consumption of textiles very much exceeded in value our export trade, but

during the ensuing thirty years the case was reversed; finally, since 1890 our home trade has been greater than our exports. Taking the whole term of fifty-five years, it will be seen that exports are 6 per cent. more than the home trade. It may be interesting to compare the sum paid for raw material with the value of manufactured goods, in order to arrive approximately at the net value of British textile industry, viz.:—

Period.	Millions £ Sterling.		
	Manufactures.	Raw Material.	Net Result.
1841-50 . .	905	342	563
1851-60 . .	1,299	501	798
1861-70 . .	1,749	734	1,015
1871-80 . .	2,009	707	1,302
1881-90 . .	1,978	682	1,296
1891-95 . .	947	312	635
Fifty-five years	8,887	3,278	5,609

The net result for the whole term has been over 100 millions a year, and at present averages 127 millions, equal to £115 per head of the actual number of operatives in our mills, which suffices to show how profitable is our textile industry. If we compare the cost of each kind of raw material with the value of goods produced in the whole fifty-five years, we find approximately as follows:—

	Millions £ Sterling.		
	Raw Material.	Manufactures.	Net Result.
Cotton . .	1,701	4,351	2,650
Wool . .	893	2,524	1,631
Flax . .	282	766	484
Silk . .	230	631	401
Hemp . .	96	329	233
Jute . .	76	286	210
Total . .	<u>3,278</u>	<u>8,887</u>	<u>5,609</u>

Dividing the net result into aliquot parts, we find that cottons stand for 47 per cent., woollens 29, linens 9, silks 7, hemp and jute 8 per cent. of the total industry of the last fifty-five years.

VIII. HARDWARE.

The weight of raw material consumed in our metallic industries has multiplied nearly sixfold since 1840, showing approximately as follows:—

Tons of	1840.	1870.	1895.
Iron . .	1,150,000	5,210,000	7,150,000
Copper . .	40,000	54,000	80,000
Lead, &c. .	80,000	170,000	250,000
Total . .	<u>1,270,000</u>	<u>5,434,000</u>	<u>7,480,000</u>

The above table does not show the production, but merely the weight of metals converted into

British manufactures, and is exclusive of pig-iron and other unmanufactured metals exported to foreign countries. Suffice it to say that our foundries, shipyards, and machine-shops use up 150,000 tons of metal weekly, and that the consumption yearly is equivalent to 410 lbs. per inhabitant, which is more than the consumption of bread. There is no country in the world where the consumption of metal in ratio to population is so enormous, nor does the history of past ages afford any parallel.

Iron.—We have a record of the iron trade for the year 1835—that is, two years before the Queen's accession—and if we compare same with the figures for 1895, we see at a glance the marvellous progress of this branch of industry in sixty years, viz. :—

Tons.	1835.	1895.	Increase.
Production	700,000	8,020,000	7,320,000
Pig-iron exported . .	20,000	870,000	850,000
Manufactures exported .	160,000	1,970,000	1,810,000
Home use	520,000	5,180,000	4,660,000

We do not yet know what the production in 1896 amounted to, but the trade returns show that the exports were 720,000 tons over 1895, from which it may be inferred that the production exceeded 8,700,000 tons—that is, $12\frac{1}{2}$ times what it was in 1835. In the above table the manufactures exported are merely those in a crude state,

such as bar, bolt, and rod iron, railway bars, sheet-iron, boiler plates, galvanised iron, &c., but are exclusive of cutlery, machinery, &c.: the exports of the latter in 1895 amounted in value to £19,100,000, representing a weight of at least 700,000 tons. Hence it appears that we export yearly, in one form or other, almost 4,000,000 tons of iron or ironwork—that is, over 10,000 tons a day. This, of course, includes not only iron, but also steel, an industry which was in its infancy when the Queen ascended the throne. The share which Great Britain has had in the development of steel is shown in the following table:—

	Tons made Yearly.		
	1850.	1870.	1893-94.
Great Britain .	49,000	215,000	3,680,000
United States .	5,000	70,000	3,120,000
Germany .	10,000	126,000	2,160,000
Other countries .	7,000	129,000	3,330,000
Total .	71,000	540,000	12,290,000

Since 1870 our production of steel has multiplied eighteen-fold: it is at present equal to 210 lbs. per inhabitant, as compared with 100 lbs. in the United States and 90 lbs. in Germany, these being our two great competitors in this respect.

The following table shows the approximate value

of manufactures of iron and steel in Great Britain during forty-four years ending December 1894:—

Period.	Millions £ Sterling.				
	Iron.	Steel.	Total.	Export.	Home Use.
1851-60 . .	383	56	439	178	261
1861-70 . .	540	97	637	260	377
1871-80 . .	729	341	1,070	414	656
1881-90 . .	518	504	1,022	461	561
1891-94 . .	170	270	440	176	264
Forty-four years.	2,340	1,268	3,608	1,489	2,119

The approximate value of our iron and steel manufactures in 1894 was 116 millions sterling, against 20 millions in 1835, this prodigious development being in a great measure due to the inventions of Bessemer, Siemens, &c., which were attended with a striking reduction in cost. Steel-plates, for example, fell from £40 a ton in 1860 to £5 in 1894.*

IX. MINING.

The weight of mineral raised in Great Britain is now seven times as much as in the year 1840, viz. :—

* For further details regarding hardware and other manufactures of the United Kingdom, the reader is referred to my recently published work entitled "Industries and Wealth of Nations," Longmans, London, 1896.

	1840.	1870.	1895.
Coals, tons .	30,000,000	110,000,000	189,700,000
Ironstone, &c.	3,800,000	16,700,000	49,500,000
Total .	<u>33,800,000</u>	<u>126,700,000</u>	<u>239,200,000</u>

Comparing the above figures with population, we find that the product is now over 6 tons per inhabitant, against $1\frac{1}{4}$ tons in 1840. The actual value is 78 millions (official £76,600,000), equal to 40 shillings per inhabitant, against 11 shillings in 1840. It has been aptly observed by Michel Chevalier and other writers that Great Britain draws greater wealth from her collieries than Spain obtained from the gold and silver mines of the New World in their best time. The weight and value of coal raised since the Queen's accession are shown approximately as follows:—

Period.	Million Tons.	Million £.
1837-50 . .	472	115
1851-70 . .	1,613	410
1871-95 . .	3,993	1,283
Fifty-nine years	<u>6,078</u>	<u>1,808</u>

In the earlier years of the reign, down to 1850, the annual production averaged 35,000,000 tons; at present it reaches 190,000,000—that is, 600,000 tons daily, being over a ton for each miner; whereas in 1840 it took three men to raise a ton.

The coal raised is disposed of in the following manner:—

	Tons.
Exported	44,000,000
Factories, &c.	86,000,000
Railways	20,000,000
Domestic use	40,000,000
	<hr/>
Total	190,000,000

The greatest depth of any coal-pit in Great Britain is 2500 feet, or half-a-mile, and it is considered feasible to extract coal to a depth of 4000 feet, on which basis we have a supply for 550 years at the present rate of consumption. The use of electric power is not likely to cause the consumption to diminish, but it will probably prevent any remarkable increase in this respect. The quantity of coal raised in the last five years (1891–95) averaged 182,000,000 tons, the average in the five years preceding having been 170,000,000. Before the introduction of electric power the extraction of coal went on doubling in thirty years, at which rate our coal-fields would have been exhausted in 115 years. So great has been the saving of labour by reason of improved machinery in the last thirty-five years, that we find two miners now produce mineral stuff to the same value as three miners in 1860. The following table shows the number of hands in

mines and quarries, and the value of output in 1860 and 1895 :—

Year.	Hands.	Output, £.	£ per Hand.
1860. . .	497,000	30,800,000	62
1895. . .	838,000	77,900,000	93

Great Britain raises 32 per cent. of the total weight of mineral raised in the world, and the United States 30 per cent. ; the ratio to population is 6 tons per inhabitant in the United Kingdom, 3 tons in the United States.

X. BANKING.

The banking-power of the United Kingdom in 1840, according to the *British Magazine*, amounted to 132 millions sterling, or £5 per inhabitant: in 1895 it reached 1111 millions, or £28 per inhabitant, viz. :—

	Millions £.		
	Deposits.	Capital.	Total.
England	786	159	945
Scotland	93	16	109
Ireland	44	13	57
United Kingdom	923	188	1,111

The above shows an average of £32 in England, £26 in Scotland, and £12 in Ireland, per head of

the population. It is interesting to observe that the proportions of banking in the three kingdoms are almost the same as those of wealth (as shown in next chapter), viz. :—

	Millions £ Sterling.		Ratio.	
	Wealth.	Bank-power.	Wealth.	Bank-power.
England . . .	10,062	945	85·2	85·1
Scotland . . .	1,094	109	9·3	9·8
Ireland . . .	650	57	5·5	5·1
United Kingdom .	11,806	1,111	100·0	100·0

The banking-power in Scotland is relatively much higher than in England, as compared with wealth, which is not surprising, since it is generally admitted that Scotland and Switzerland are ahead of all other countries in the practical science of banking. On the other hand, poor as Ireland is, her banking-power compared with her wealth ought to be 8 per cent. higher than it is. Probably the banking superiority of Scotland has much to do with the great industrial prosperity of that kingdom, and the deficiency in Ireland may partly account for the deplorable backwardness of the island.

In 1895 the number of banks and banking-offices in the United Kingdom showed thus :—

	Companies.	Offices.	Per Million Population.
England	197	2,745	92
Scotland	10	1,008	240
Ireland	9	493	110
United Kingdom	216	4,246	108

According to a statement published in 1885 the banks of the United Kingdom were the property of 90,000 shareholders: the market-value of the shares in 1895 exceeded 280 millions sterling, the paid-up capital being 127 millions. The average quotation of stock was therefore as £225 to £100, or 125 per cent. premium. The following table shows the position of banking in the three kingdoms:—

	Per £100 Paid-up Capital.			
	English.	Scotch.	Irish.	Foreign.
Market value	289	286	274	157
Capital on call	256	215	255	55
Reserve fund	52	71	49	33
Discounts	553	653	436	513
Deposits	830	1,005	614	450
Assets	1,066	1,293	853	730

Compared with amount of paid-up capital, the Scotch banks have the largest reserve fund, and their discount business is relatively much greater than that of English banks. In fact, Scotch banking seems as much ahead of English as the latter is

superior to Irish. It is, moreover, worthy of notice that, although the ratio of capital on call—that is, of available calls on shares—is 16 per cent. less in Scotland than in England, the average value of Scotch banking stock is only 1 per cent. under the English. On the other hand, the capital on call in Ireland holds the same ratio as in England, but the average value of shares is 5 per cent. lower. Each of the 90,000 shareholders in the United Kingdom may be said to wield a banking-power of £12,000, and the market-value of his stock is £3100, bringing him in a revenue of about £100 a year.

In the United Kingdom the quantity of money used is comparatively small, which is explained by the great development of banking, which enables us to do most of our business by means of cheques and bills. Notwithstanding the enormous increase of both our home and our foreign trade in the last sixty years, the amount of money in use has simply kept pace with population, showing the same ratio per inhabitant as in the early years of the Queen's reign, viz. :—

	Millions £ Sterling.				Shillings per Inhabitant.
	Gold.	Silver.	Notes.	Total.	
1840 . .	55	11	34	100	75
1895 . .	85	24	40	149	75

Meantime the transactions at the Bankers'

Clearing-House, London, compared with the population of the United Kingdom, have risen as follows:—

Year.	Millions £.	£ per Inhabitant.
1839 . .	980	37
1876 . .	4,963	150
1895 . .	7,593	190

Measuring the industrial and commercial activity by the above standard, it appears that each inhabitant of the United Kingdom transacts at present five times as much business as at the Queen's accession. Nor is this an adequate measure, seeing that there has been a remarkable fall of price-level, as Sauerbeck's tables show, viz. :—

Period.	Price-level.
1838-47 . . .	1,000
1878-87 . . .	850
1895 . . .	666

Here we see that £2 will now buy as much as £3 would in the first ten years of the reign; consequently the transactions of the Clearing-House in 1895 represented 50 per cent. more business than expressed by the nominal amount.

When we sum up the amount of coin issued by the Royal Mint, London, during the present reign, we find that it vastly exceeds the aggregate coinage

under all preceding monarchs from the time of William the Conqueror, viz. :—

Period.	Millions £ Sterling.		
	Gold.	Silver.	Total.
1066-1837 . .	164	42	206
1837-1895 . .	313	32	345

British coinage since the Queen's accession has averaged 6 millions a year, without counting Colonial mints, which have turned out in the same interval 362 millions sterling. Thus the total coinage of the reign has been as follows :—

	Millions £ Sterling.		
	Gold.	Silver.	Total.
British . . .	313	32	345
Colonial . . .	128	242	362
Total . . .	433	274	707

It seems that about one-fourth of all the coined money in use in the world bears the effigy of Queen Victoria, the amounts minted by all nations in the last sixty years, according to official returns, summing up as follows :—

	Millions £.		
	Gold.	Silver.	Total.
British Empire . . .	433	274	707
European Continent . . .	715	253	968
United States . . .	342	125	467
The World . . .	1,490	652	2,142

As the total amount of gold coin existing in 1894 was estimated at 821 millions sterling, it would appear that most of the coin in use has been twice minted. The amount of British gold, therefore, now in use is about 220 millions, of which only 85 millions exist in the United Kingdom: there is, in fact, no corner of the world, however remote, in which the gold sovereign of England is not found.

XI. WEALTH.

Porter estimated the wealth of the United Kingdom in 1840 at 4100 millions sterling: the Probate returns for the past five years show that England has an average wealth of £331, Scotland £263, and Ireland £142 per inhabitant, the amount of property passing through the Probate Court yearly giving the above ratios to each person who died (including children and paupers). This makes up an actual total of 11,806 millions, showing an average increase of 140 millions yearly, or 84 shillings per inhabitant. The actual wealth of the three kingdoms in 1895 was made up approximately as follows:—

	Millions £ Sterling.			
	England.	Scotland.	Ireland.	U. Kingdom.
Land . . .	1,202	188	296	1,686
Cattle, &c. . .	250	46	95	391
Railways . . .	812	134	39	985
Factories . . .	234	45	13	292
Houses . . .	1,962	187	51	2,200
Furniture . . .	981	93	26	1,100
Merchandise . . .	629	114	62	805
Sundries . . .	3,992	287	68	4,347
Total . . .	10,062	1,094	650	11,806

The first two items in the above list represent farming wealth, which constitutes a very small share of the total in Great Britain, but a very large share in Ireland, viz.:—

	Millions £.			£ per Inhabitant.	
	Farming.	Commercial, &c.	Total.	Farm-wealth.	Total.
England . . .	1,452	8,610	10,062	48	331
Scotland . . .	234	860	1,094	55	263
Ireland . . .	391	259	650	85	142
U. Kingdom	2,077	9,729	11,806	53	302

Agricultural wealth is 60 per cent. of the total in Ireland, 21 per cent. in Scotland, and 14 per cent. in England. When Porter made his estimates in 1840, farming capital constituted 47 per cent. of the wealth of the United Kingdom; to-day it forms

only 17 per cent., and the ratio diminishes year by year as the wealth of the nation increases.

House-property is a trustworthy gauge of national wealth, and under this head the figures for the United Kingdom, between houses and factories, show as follows:—

Year.	Houses.	Rental, £.	Value, Millions £.	£ per House.
1841 .	4,775,000	41,500,000	692	145
1894 .	7,360,000	149,600,000	2,493	339

The average value of each house having more than doubled, we are justified in saying that the people are twice as well housed as when the Queen ascended the throne. There is, nevertheless, a startling difference between Great Britain and Ireland in this respect, the census of 1891 showing as follows:—

	Houses.	Rental.	£ per House.
England . .	5,461,000	123,700,000	22·6
Scotland . .	818,000	13,200,000	16·1
Ireland . .	871,000	3,600,000	4·1
United Kingdom	7,150,000	140,500,000	19·7

The people of Great Britain are the best housed in Europe, whereas Ireland in this respect is on a par with Russia. That there has been a great improvement in the housing of the inhabitants of Great Britain appears from the numbers of houses valued over and under £20 a year, viz.:—

	Number.			Percentage over £20.
	Under £20.	Over £20.	Total.	
1841 .	3,203,000	244,000	3,447,000	7·1
1871 .	3,917,000	754,000	4,671,000	16·2
1891 .	5,009,000	1,270,000	6,279,000	20·2

The number of comfortable houses that are assessed over £20 has risen 420 per cent. since 1840, while the population of Great Britain in the same interval has risen only 90 per cent.: that is to say, building has progressed four times as fast as population. The value of houses and factories is now 21 per cent. of the wealth of the nation, against 17 per cent. in 1840, showing that the rapid increase of wealth in the last fifty-six years has been accompanied by a still more remarkable improvement in our habitations.

Railways are another important item of the public fortune. The capital value of the lines in traffic (110 miles) when the Queen's reign began was only 3½ millions sterling. The cost of lines existing in 1896 was 1001 millions, but the market value of the shares was more than 1500 millions.

It may be interesting to compare Pebrer's estimates of the wealth of the three kingdoms in 1833 with the amounts given on the preceding page for 1895, viz. :—

	Millions £.		£ per Inhabitant.	
	1833.	1895.	1833.	1895.
England . . .	2,471	10,062	166	331
Scotland . . .	373	1,094	148	263
Ireland . . .	750	650	95	142
U. Kingdom . .	3,594	11,806	144	302

Thus in sixty-two years England quadrupled, Scotland trebled her wealth, while Ireland declined 100 millions. Meantime, as the population of Ireland has fallen 40 per cent., the ratio of wealth to each inhabitant is now much higher than at the beginning of the reign.

Income-tax returns give an indirect idea of the annual earnings of the people. Some English writers hold that the gross earnings are double the income-tax assessments. If so, we find for the whole United Kingdom as follows:—

Year.	Assessments. Millions £.	Net	Per Inhab. £
		Earnings. Millions £.	
1860 . . .	335	670	23·1
1880 . . .	578	1,156	32·7
1894 . . .	706	1,412	36·5

It appears that the earnings per inhabitant are 57 per cent. higher than in 1860, and were made up in 1894 as follows:—

	Millions £.		
	Assessments.	Earnings.	£ per Inhab.
England . . .	602	1,204	40·1
Scotland . . .	65	130	31·5
Ireland . . .	39	78	16·9
U. Kingdom . .	706	1,412	36·5

All estimates, however, that are based on income-tax assessments are likely to make the earnings of England appear greater, those of Scotland and Ireland less, than they really are. The reason is obvious, namely, that many wealthy landowners and others from Scotland and Ireland pay income-tax in London, although residing there only part of the year. The earnings of the three kingdoms, as explained at considerable length in the "Industries and Wealth of Nations,"* were in 1894 approximately as follows:—

Class.	Millions £ Sterling.			
	England.	Scotland.	Ireland.	U. Kingdom.
Agricultural . .	88	17	33	138
Manufacturing . .	425	81	19	525
Commercial . . .	263	44	23	330
Various	368	45	17	430
Total	1,144	187	92	1,423

The above shows an average income of £38 per head in England, £45 in Scotland, and £20 in Ireland.

* Longmans, London, 1896.

It is worthy of remark that agricultural earnings form only 8 per cent. of the total in Great Britain, whereas in Ireland they stand for 36 per cent.

With respect to the distribution or diffusion of wealth, if we compare the Probate Court returns of late years with those of 1840, we find two distinct features: first, the proportion of people above the reach of want has increased so favourably that in the years 1889-93 no fewer than 13 per cent. of adults who died left fortunes exceeding £100, whereas the ratio in 1840 was only $6\frac{1}{4}$ per cent.; secondly, the congestion of wealth among the Upper Ten Thousand is increasing so rapidly as to give cause for uneasiness. Thus we find that between 1840 and 1888-93 the number of estates under £5000 rose 149 per cent.; those over £5000 no less than 170 per cent. If the figures were reversed the prospects of the public welfare would be more encouraging.

XII. FINANCES.

The public money is more wisely handled in Great Britain than in the other great European States, and the record of our finances since 1837 is on the whole most satisfactory. In the following table are shown the receipts of revenue in the last sixty years:—

	Millions £.			
	Customs.	Excise.	Taxes, &c.	Total.
1837-50 . . .	322	217	248	787
1851-60 . . .	237	181	260	678
1861-70 . . .	238	204	288	730
1871-80 . . .	216	271	314	801
1881-90 . . .	198	262	423	883
1891-96 . . .	121	182	299	602
Sixty years . . .	1,332	1,317	1,832	4,481

In the early years of the reign, taxes on articles of consumption—that is, customs and excise—formed 70 per cent. of the revenue, but now they are only 50 per cent., and in this way much benefit has resulted to the working-classes, on whom such taxes chiefly fall. If we compare taxes with population, the incidence, according to a report published by the Treasury in 1895, has been as follows:—

Year.	Amount £.		Shillings per Inhabitant.	
	G. Britain.	Ireland.	G. Britain.	Ireland.
1840 . . .	46,300,000	5,400,000	50	13
1860 . . .	61,400,000	7,700,000	53	26
1880 . . .	69,800,000	7,300,000	47	28
1890 . . .	84,900,000	7,900,000	51	33

The incidence of taxation per inhabitant in Great Britain is the same as at the beginning of the reign, but in Ireland it has more than doubled. In Great Britain each inhabitant pays now 1 shilling more, in Ireland 20 shillings more, than in 1840.

This inequality has arisen simply from the fact that all fiscal legislation since 1840 has been on the assumption of an increasing population, whereas in Ireland the number of inhabitants has declined 45 per cent. The different conditions of the two countries were not taken into account, and thus it has come to pass that Great Britain, with her world-wide commerce and colonial possessions, has grown enormously rich, while Ireland, with increased taxation, has no corresponding increase of wealth.

National expenditure since 1837 may be summed up thus:—

Millions £.					
		Government.	Debt.	Army & Navy.	Total.
1837-50	. .	132	401	220	753
1851-60	. .	136	285	288	709
1861-70	. .	157	264	274	695
1871-80	. .	212	276	282	770
1881-90	. .	296	278	306	880
1891-96	. .	237	151	208	596
Sixty years	. .	1,170	1,655	1,578	4,403

In the above table the item of Government includes a sum of 54 millions handed over to local authorities in aid of rates from 1883 to 1896, in the form of subsidy from excise, customs, and death-duties, all which are, moreover, included under Revenue on page 61, because collected by officers of the Crown. In official Budgets these

subsidies are not counted either in revenue or in expenditure.

At the beginning of the reign the annual cost of the army and navy was under 16 millions; at present it reaches 40 millions, or 20 shillings per inhabitant. The military force of the United Kingdom on land has quadrupled in forty-five years, viz. :—

	1850.	1895.
Army	139,000	220,000
Volunteers . . . . .	...	225,000
Militia, &c.	20,000	210,000
Total	<u>159,000</u>	<u>655,000</u>

This is irrespective of the Anglo-Indian army and the Royal Irish constabulary. The maintenance of our regular army costs $13\frac{1}{2}$ millions yearly or £62 per man, against £44 in France and £41 in Germany, from which it would seem that our troops are better treated than those of Continental States. There is also an expenditure of $7\frac{1}{2}$ millions a year for pensions and auxiliary forces; making a total of 21 millions.

Although the navy is more powerful now than it was fifty years ago, the substitution of ironclads and heavy cannon for the vessels and artillery in use before the Crimean war has led to a sensible reduction in the numbers of both, the only increase being in the number of seamen, viz. :—

	1850	1896.
Vessels	585	300
Guns	17,200	2,910
Men	48,000	89,000

At present there are 110 superior fighting ships carrying 2910 guns, but the number carried by 190 minor vessels is not stated. The armament includes 930 heavy guns, ranging from 12 to 111 tons, and 1980 of calibre under 12 tons. The indicated horse-power shows 56 vessels over 10,000 horse-power, with a nominal speed ranging from 17 to 22 knots an hour. Annual expenditure for the navy reaches 19 millions, of which 10 millions are for ships and armament, 6 millions for officers and men: the latter is an average of £67 per man, or £5 more than in the army.

National debt, except during the brief period of the Crimean war, has steadily declined during the present reign, comparing thus with population:—

	Amount £.	Population.	£ per Head.
1837 . .	796,000,000	26,050,000	30·6
1860 . .	826,000,000	28,900,000	28·4
1896 . .	652,500,000	39,500,000	16·5

If the value of Suez Canal shares were deducted, the real debt would not exceed 627 millions, say £16 per inhabitant, or little more than half the ratio in 1837. And if we compare debt with

national wealth the decline is still more notable, viz. :—

	Millions £.		Debt Ratio.
	Wealth.	Debt.	
1837	4,100	796	19·4
1896	11,806	627	5·3

Thus the relative burthen is now only one-fourth of what it was at the Queen's accession. The annual service of the debt cost 22 shillings per inhabitant in 1837, and now only 12½ shillings: at the former period it absorbed exactly half of the revenue, whereas now it takes less than one-fourth. Most of the nations of Continental Europe have doubled or trebled their debts in the interval.

XIII. FOOD SUPPLY.

The abolition of nearly all taxes on food has been an inestimable blessing to the people of Great Britain, although it has been injurious to Ireland, whose principal industry has been always agricultural. There is no country of Europe where the people is so well fed as in Great Britain, the food expenditure amounting to £357,000,000 yearly, or £10, 4s. per inhabitant, against £8, 16s. in France, £7, 15s. in Germany, and £5, 5s. in Ireland. If we compare the consumption of the principal articles

of food in the United Kingdom in 1895 with previous periods we find:—

	Per Inhabitant.		
	1837-40.	1861-70.	1895.
Wheat, lbs.	290	335	360
Meat, lbs.	75	90	110
Sugar, lbs.	16	41	88
Tea, oz.	20	52	90
Beer, gallons	24	28	30

In the above table no distinction is made regarding Ireland, where the consumption is relatively small, and hence the ratios for Great Britain in all five items would be considerably higher than shown above.

At the Queen's accession Great Britain drew great quantities of wheat from Ireland, but the repeal of the Corn Laws has so completely changed the condition of the sister-island, that she now grows hardly enough wheat to feed the city of Dublin. In 1895 the wheat-supply of the United Kingdom was made up thus:—

	Bushels.	Days' Supply.
Home-grown	51,000,000	71
United States	87,000,000	121
Russian	46,000,000	65
Argentine	23,000,000	33
Indian	17,500,000	25
Canadian	9,500,000	13
Various	26,500,000	37
Total	<u>260,500,000</u>	<u>365</u>

The quantity grown in the United Kingdom would feed our people for no more than 71 days: we eat American flour during four months, Russian two months, and depend on various colonies and other countries during $3\frac{1}{2}$ months of the year. As our population is increasing very rapidly, we shall before long subsist during eleven months in the year on imported wheat.

The meat supply stands on quite another footing, for in this respect Ireland is of immense benefit to Great Britain. The consumption of meat in this country is much greater per inhabitant than among other European nations, viz. :—

Lbs. per Inhabitant Yearly.

Great Britain . 121	Germany . . 75	Austria . . 60
Ireland . . . 40	France . . . 70	Belgium . 56

It has been always recognised that the industrial efficacy of nations requires a liberal supply of animal food, especially meat. Whether the consumption of meat in Great Britain be excessive is a matter open to question, but it will hardly be denied that a proper supply for people in northern latitudes would be at least the ratio of consumption in Germany, say 75 lbs. yearly or $1\frac{1}{2}$ lbs. weekly. One of the reasons why Ireland is so backward among nations, notwithstanding her proximity to

so prosperous a country as Great Britain, is the insufficiency of animal food. The United Kingdom exported meat at the time of the Queen's accession, but at present we import 850,000 tons yearly from abroad, exclusive of our supply from Ireland. The meat supply of the island of Great Britain in 1896 was as follows:—

	Tons.	Days' Supply.
Native . . .	760,000	146
Irish . . .	280,000	55
United States . .	470,000	91
Colonial, &c. . .	380,000	73
Total . . .	1,890,000	365

There is much less reason for apprehension as regards meat supply than with respect to wheat, in case of a general war. Exclusive of imports from foreign countries, Great Britain can count on 1,040,000 tons of British and Irish meat, equal to a supply of 65 lbs. per inhabitant. Meantime it is to be observed that imports of foreign meat are increasing so rapidly that it is manifest the consumption per inhabitant is rising every year, being at present for the whole United Kingdom 110 lbs., against 108 lbs. in 1892-94. The imports of 1894 and 1896 compare as follows:—

From	Tons.	
	1894.	1896.
United States . . .	426,000	470,000
Australia	72,000	93,000
Canada	47,000	68,000
Argentina	33,000	64,000
Denmark	38,000	61,000
Other countries . . .	77,000	94,000
Total	693,000	850,000

During the past ten or twenty years, rumours have been set afloat at intervals to the effect that the production of meat in the United States would be insufficient to keep up exports on so large a scale as hitherto, and that before long we should have to look mainly to the British Colonies for this commodity. Beyond question the United States population increases by nearly $1\frac{1}{2}$ million souls yearly, thus increasing the consumption of meat; but so vast are the cattle-farms of that country that the available surplus for exportation remains undiminished. In fact, our imports of American meat have risen more than 10 per cent. in the last two years. The production of meat in the United Kingdom has increased by one-fourth since 1840, viz. :—

	Tons.	
	1840.	1896.
Beef . . .	380,000	590,000
Mutton . . .	290,000	320,000
Pork . . .	210,000	190,000
Total . . .	880,000	1,100,000

Although Ireland has only 11 per cent. of the population of the United Kingdom, she stands for one-third of the meat production, viz. :—

	Tons.		
	G. Britain.	Ireland.	U. Kingdom.
Beef . . .	350,000	240,000	590,000
Mutton . . .	280,000	40,000	320,000
Pork . . .	130,000	60,000	190,000
Total . . .	760,000	340,000	1,100,000

Not only are we in a great measure dependent on foreign countries for grain and meat, but also for dairy products, the consumption of which is as follows :—

	Native.	Imported.	Total.	Per Inhab.
Butter, tons . . .	90,000	195,000	285,000	16 lbs.
Cheese, „ . . .	110,000	110,000	220,000	12 „
Lard, „ . . .	40,000	68,000	108,000	6 „
Eggs, millions . . .	1,800	1,590	3,390	85 eggs

If we exclude such articles as tea, coffee, sugar, wine, and others not produced in the British Islands,

as well as grain, fodder, &c., used for cattle (whether home-grown or imported), the food account of the United Kingdom will show thus:—

	Value, £.		
	Home-grown.	Imported.	Total.
Wheat . . .	8,400,000	30,700,000	39,100,000
Meat . . .	55,000,000	34,800,000	89,800,000
Dairy products	33,000,000	30,100,000	63,100,000
Total . . .	96,400,000	95,600,000	192,000,000

The above constitute the principal necessities, the aggregate value of home products and imports being equal. If we add to the foregoing the value of liquor and of Colonial products, &c., the sum expended yearly will be as follows:—

	Value, £.		
	Home-grown.	Imported.	Total.
Necessaries . . .	96,400,000	95,600,000	192,000,000
Liquor . . .	85,000,000	7,000,000	92,000,000
Sugar, tea, &c. . . . .	...	29,700,000	29,700,000
Sundries . . .	57,700,000	9,600,000	67,300,000
Total . . .	239,100,000	141,900,000 *	381,000,000

The amount here stated for liquor is the value in bond, the excise duty having been counted

* Exclusive of grain for cattle, the imports of which in 1896 amounted to 16 millions sterling.

already among the taxes of the United Kingdom. Moreover, all the foregoing amounts are at first hand; retail prices would be fully 25 per cent. additional. The retail expenditure for food in Great Britain reaches $8\frac{1}{2}$ pence, in Ireland $4\frac{1}{2}$ pence, daily per inhabitant, equal to 8 pence all round for the United Kingdom.

XIV. INSTRUCTION, PRESS, POST-OFFICE.

There are three measures of the intellectual advancement or activity of a nation—schools, newspapers, and post-office, all of which have made extraordinary progress during the reign.

So beneficial has been the system of primary education, as far as the instruction of the masses is concerned, that the percentage of adults able to write their name, according to the marriage registry books, has risen as follows:—

	Ratio in 100.		
	1836.	1870.	1894.
England	57	77	95
Scotland	78	86	97
Ireland	48	64	83
United Kingdom . . .	56	76	93

At the Queen's accession there were 44 per cent. of the people of the United Kingdom unable to

sign the marriage register, and that class of ignorant persons is now reduced to 7 per cent. If the intellectual strength of a nation be taken, *prima facie*, as the number of persons who can write, we shall see that Scotland and England have made great progress, while the number has actually diminished in Ireland.

	Able to Write.		
	1836.	1894.	Increase.
England . . .	5,985,000	19,950,000	13,965,000
Scotland . . .	1,365,000	2,795,000	1,430,000
Ireland . . .	2,690,000	2,675,000	...
U. Kingdom . .	10,040,000	25,420,000	15,380,000

In 1836 Ireland counted twice as many persons who could write their name as Scotland; at present the number in the latter country exceeds that in Ireland. At the beginning of the reign Ireland represented more than one-fourth of the intellectual force of the United Kingdom, whereas she has now fallen to one-tenth. In this fact we see the disastrous result of emigration with regard to Ireland. On the other hand, we see that the intellectual force of England has trebled, of Scotland doubled, in the last sixty years.

The press has been quite as efficacious in promoting popular instruction as the schools, the circulation of newspapers being now nearly 60

times as great as at the beginning of the Victorian epoch. In 1841 there was no daily paper published in England outside London, and it was not until Mr. Gladstone abolished the paper-duties in 1861 that the penny newspaper gave to journalism a popularity and power never before known. The whole newspaper issue of the United Kingdom rose from $3\frac{1}{4}$ millions monthly in 1831 to $45\frac{1}{2}$ millions in 1864, and is now approximately 174 millions, or little short of 7 millions daily. Comparing the total issue in a year with population, we find that the ratio is now 53 papers per inhabitant, against two in 1831. The newspapers of the United Kingdom represent a gross income of 16 millions sterling, a sum sufficient to pay for the total maintenance of the British army.

Post-office business was in its infancy when the Queen ascended the throne, but Rowland Hill's introduction of penny postage in 1840 gave it an immense impulse. The number of letters (and postcards) delivered yearly has risen as follows:—

Year.	Millions.	Per Inhabitant.
1839	82	3
1851-55	410	15
1885	1,521	42
1895	2,084	53

Measured by this gauge, the intellectual power

of the United Kingdom is now five times as great as in the period immediately preceding the Crimean war. The business of the Post-office grows much faster than population, as may be seen by comparing the number of letters and of printed papers, books, &c., sent in 1885 and in 1895:—

	1885.	1895.
Letters, millions,	1,521	2,084
Papers, &c. ,,	464	766
Total	<u>1,985</u>	<u>2,850</u>

The above (which is exclusive of parcel post) shows an increase of 43 per cent. in ten years, giving a ratio of 73 letters or papers per inhabitant in 1895, against 55 ten years before. The business of the three kingdoms compares thus:—

	Millions.		Per Inhabitant.	
	1885.	1895.	1885.	1895.
England . .	1,662	2,413	61	80
Scotland . .	193	263	50	63
Ireland . .	130	174	26	38
U. Kingdom	<u>1,985</u>	<u>2,850</u>	55	73

If we take Post-office business as the criterion of intellectual activity, the relative strength of the three kingdoms at various dates stood thus:—

	1851-55.	1885.	1895
England .	80·5	83·8	84·6
Scotland .	10·0	9·7	9·2
Ireland .	9·5	6·5	6·1
	<hr/>	<hr/>	<hr/>
	100·0	100·0	100·0

It appears that Scotland and Ireland have relatively lost ground, and that the predominance of England is becoming every year more pronounced. This is naturally the result of population increasing much more rapidly in England than in the United Kingdom.

Telegraphic communication has formed in late years an important part of Post-office business, the number of messages having risen as follows:—

Year.	Messages.	Per 100 Inhabitants.
1872 . .	15,500,000	50
1895 . .	71,600,000	180

The ratio of messages in 1895 to 100 inhabitants was 200 in England, 174 in Scotland, and 90 in Ireland. Comparing telegrams with letters, we find that a Scotchman sends 40 telegrams for every 1000 letters, an Englishman 35, an Irishman 32, which would indicate that the Scotchman appreciates more than an Englishman or Irishman the incalculable benefit that cheap telegraphy places in our hands.

XV. PUBLIC HEALTH.

Sanitary legislation was not much attended to in the "good old times," and may be regarded as a modern invention, in which England is honourably pre-eminent. During the present reign more than 150 millions sterling has been spent in water supply, drainage, &c., and as a result, the death-rate has been considerably reduced, viz.:—

Period.	Deaths Yearly per 1000 Inhabitants.			
	England.	Scotland.	Ireland.	U. Kingdom.
1837-60 .	22·5	...	...	...
1871-80 .	21·3	21·8	18·1	21·0
1891-95 .	18·8	19·2	18·5	18·7

We only know the death-rate of England before 1860; but if we suppose it was the same for the three kingdoms ($22\frac{1}{2}$ per 1000), and compare what mortality that would imply at present with the actual number of deaths in 1895, we find the saving of life due to sanitary improvements has been as follows:—

	At 22·5.	Actual No.	Saving.
England . . .	684,000	569,000	115,000
Scotland . . .	94,000	82,000	12,000
Ireland . . .	103,000	84,000	19,000
U. Kingdom . .	881,000	735,000	146,000

Thus we save 400 lives *daily*, and in this respect the working-classes are the principal gainers, because insanitary conditions affect them more than people in easy circumstances, both as regards sickness and death-rate. Dr. Farr lays it down as an axiom that the number of sick persons on any day in the year (excepting epidemical visitations) will be double the number of deaths yearly. Thus the actual number of sick in the three kingdoms is at present 1,470,000, and but for sanitary improvements would be 1,762,000. It may be taken for granted that each person sick represents a loss of 2 shillings a day to the community. Hence we are saved £29,000 daily or 10½ millions yearly in the reduced number of sick people, consequent on sanitary improvements. Humanity apart, our drainage and waterworks pay exactly 7 per cent. on their cost in the saving here pointed out.

It may be asked meantime why the death-rate of Ireland is higher now than twenty years ago, while the reverse occurs in Great Britain? The late Dr. Graily Hewitt, one of the most distinguished physicians in London, was of opinion that an insufficiency of food was the ultimate cause of every trouble in Ireland. It is unquestionable that the only period of prosperity in Ireland in the present century was from 1855 to 1877, when the people were well fed, and the subsequent increase of

mortality would confirm Dr. Graily Hewitt's theory. But it is also to be observed that since 1877 there has been an average outflow of 80,000 emigrants yearly, for the most part in the prime of life, and this diminution of the strongest and healthiest class would suffice of itself to explain the higher death-rate now than twenty years ago.

As regards insanity there has been a marked increase of ratio during the present reign, but on the other hand a striking decrease in the ratios of blind persons and deaf-mutes compared with population. Official returns as to the number of insane show thus:—

Year.	Number.	Per 100,000 Inhabitants.
1862 . .	55,525	181
1882 . .	98,871	284
1891 . .	134,033	355

In the last thirty years the ratio of insane to population has doubled. It is much higher in Ireland than in Great Britain, the census of 1891 showing:—

	Insane.	Per 100,000 Inhabitants.
England . .	97,380	335
Scotland . .	15,456	384
Ireland . .	21,197	450
U. Kingdom .	<hr/> 134,033	355

Insanity has increased as follows:—

	Number.		Per 100,000 Inhabitants.	
	1859.	1891.	1859.	1891.
England .	36,762	97,380	187	335
Scotland .	6,413	15,456	198	384
Ireland .	...	21,197	...	450
U. Kingdom .	...	134,033	...	355

In Great Britain there were less than 2 per thousand of the population insane in 1862, and at last census the ratio exceeded 3 per thousand: in Ireland there are $4\frac{1}{2}$ per thousand insane, which is the highest ratio in the world.

As regards blindness the returns for 1851 and 1891 compare as follows:—

	Number.		Per Million Inhabitants.	
	1851.	1891.	1851.	1891.
England .	18,306	23,470	1,014	809
Scotland .	3,010	2,802	1,043	695
Ireland .	7,587	5,333	1,155	1,135
U. Kingdom .	28,903	31,605	1,051	838

Here we see that the ratio of blind persons to population has fallen 25 per cent. since 1851. There is an excessive number of blind in Ireland, the ratio being almost 50 per cent. higher than in Great Britain.

Deaf-mutes, owing to whatever cause, have diminished in a striking manner, the returns for 1831 and 1891 showing as follows:—

	Number.		Per Million Inhabitants.	
	1831.	1891.	1831.	1891.
England . . .	7,630	14,190	545	489
Scotland . . .	1,303	2,130	552	528
Ireland . . .	5,160	3,362	664	715
U. Kingdom	14,093	19,682	582	522

If we sum up the three forms of infirmity above shown, the aggregate ratio for population in the three kingdoms will appear as follows:—

	Number.	Per Million Inhabitants.
England	135,040	4,650
Scotland	20,388	5,064
Ireland	29,892	6,350
United Kingdom	185,320	4,910

The excessive ratio of infirm persons in Ireland is apparently due to three causes. First, emigration, which has been a continuous drain on the strong and healthy portion of the population, without taking away the corresponding number of insane, blind, and deaf-mutes. If Ireland had $6\frac{1}{2}$ million inhabitants, as in 1851, the ratio of infirm would

be only 4500 per million, lower even than in England. Secondly, insufficiency of food, which, according to Dr. Graily Hewitt, has so far weakened the Irish people that they are more liable to these infirmities than if they were well fed. Thirdly, longevity, which is so common that there is a large number of persons of advanced years who have lost either their intellect or some of their senses, and thus swell the numbers of the infirm. How much superior is the ratio of longevity in Ireland than in England is shown by the census returns for 1891 thus:—

	Numbers.		Ratio.	
	England.	Ireland.	England.	Ireland.
Under 60 years .	26,960,280	4,212,263	92·7	89·5
Over „ „ .	2,122,305	493,899	7·3	10·5
Population .	29,082,585	4,706,162	100·0	100·0

Keeping in view the above reasons, it is fair to conclude that there is nothing in the constitution of the Irish race which disposes it to a higher ratio of infirmities than the British. As regards the increase of insanity in Great Britain it may arise from the remarkable change of habits in the last fifty years. Urban population is now 62 per cent. of the total, and the occupations of the people are quite different from what they were in 1841, viz. :—

	1841.	1891.	Increase.
Agriculture . . .	1,760,000	1,586,000	...
Manufactures and trade .	3,535,000	9,950,000	6,415,000
Professions, &c. . .	2,602,000	3,141,000	539,000
Total . . .	<u>7,897,000</u>	<u>14,677,000</u>	

The above figures for Great Britain (exclusive of Ireland) show that, while the agricultural population has declined, the number engaged in manufactures and trade has almost trebled. Possibly the wear and tear of city life has had some influence on the rise of insanity. Moreover, in 1841 there were no railways, whereas in 1895 the railways of Great Britain carried 905 million passengers, exclusive of season-ticket holders, and who can say that the nervous system is not injuriously affected and pre-disposed to insanity by such a tremendous amount of railway travelling? There are theorists who allege that the increased consumption of meat and of tea, the spread of education and of penny newspapers, have tended in this direction, but such theories are at best doubtful. At the same time the diminished ratios of blind persons and of deaf-mutes are a most flattering circumstance, the apparent cause of which is the improvement in sanitary arrangements already mentioned.

XVI. PUBLIC MORALITY.

If the moral condition of a people may be gauged by the annual number of crimes and misdemeanours with reference to population, there has been a notable improvement in this respect in the United Kingdom during the present reign, viz. :—

Period.	No. of Convictions Yearly.		Per Million Inhabitants.	
	G. Britain.	Ireland.	G. Britain.	Ireland.
1840-49 .	24,310	11,730	1,240	1,564
1870-79 .	13,910	2,492	497	470
1890-95 .	11,240	1,265	333	275

Poverty prevailed to such an alarming degree in the earlier years of the reign, and the price of bread was so high before the repeal of the Corn Laws (1846), that the number of offences was abnormally high. Sheep-stealing and bread-riots in those days constituted a considerable amount of the business in the criminal courts, and thousands of persons were “transported” for offences that had little or no moral turpitude. Hence we should rather compare the criminal records of to-day with those of 1870-79, a period of general prosperity. It is satisfactory to find that since 1879 the number of offenders with reference to population has declined 33 per cent. in Great Britain and 42 per cent. in Ireland. So

remarkable has been the diminution of crime, that the prison population of England fell from 21,030 in 1878 to 14,122 in 1890: that is to say, from 840 criminals per million inhabitants in the former year to 490 in the latter. At the same time it is painful to be compelled here to advert to the increase of drunkenness, the besetting sin of the British Islands. The returns for England show as follows:—

Year.	Drunkards Fined.	Per 10,000 Inhabitants.
1860	88,400	44
1892	159,000	54

There has been a notable decline of illegitimate births, especially in England, where the ratio in the total number of births has been as follows:—

1841-50	67 per 1000
1890-94	43 „ „

In this respect England holds a middle position between the sister-kingdoms, the ratios being 74 in Scotland and only 26 per thousand in Ireland.

While the decline of illegitimacy is a cheering feature, we have to record a lamentable increase of divorces in Great Britain, the official returns showing as follows:—

Period.	Marriages Yearly.	Divorces.	Per 100,000 Marriages.
1867-71	204,000	180	88
1882-86	227,000	456	201

This is an evil from which Ireland is happily exempt, the average number of divorces in that country being only 4 per annum.

Suicide is also unhappily on the increase, the ratio in England averaging 80 cases yearly per million inhabitants as compared with 65 in the decade ending 1860. It is much less prevalent in the sister-kingdoms, averaging 40 per million in Scotland, and only 17 in Ireland.

XVII. CONDITION OF THE MASSES.

The greater happiness of the greater number should be the object of every statesman and economist, and, so far as the ordinary standards of human society indicate, there has been a great levelling-up of the people during the present reign.

1. We have to note a steady and marked decline of pauperism, as the official returns for the United Kingdom compared with population show :—

Year.	Population.	Paupers.	Per 1000 Pop.
1850 . .	27,300,000	1,308,000	48
1870 . .	31,400,000	1,279,000	41
1896 . .	39,500,000	1,025,000	26

If the condition of the people were the same now as in 1850, we should have at present two

millions of paupers to maintain, or double the actual number. This shows conclusively how much better off are the masses of our population than forty-six years ago; and there is another favourable circumstance, namely, that the treatment of paupers is more humane than formerly, if we are to judge by the average expenditure, viz. :—

	Expenditure, £.	Paupers.	£ per Head.
1850 . .	7,810,000	1,308,000	6·0
1895 . .	11,910,000	997,000	12·0

Thus we spend at present on each pauper twice as much as in 1850, and yet the burthen of poor-rates on the public is not perceptibly greater, being 72 pence per inhabitant, against 68 pence in 1850.

But while pauperism steadily declines in Great Britain, it is unhappily on the increase in Ireland, owing no doubt to the depression of agriculture, the returns for that country showing for 1895 as compared with 1870 thus :—

	1870.	1895.
Paupers	74,000	99,000
Expenditure, £ . .	810,000	1,050,000

The number of paupers has risen 34 per cent., while population has fallen 15 per cent., and thus it comes to pass that the burthen which falls on

the public is 55 per cent. more than it was in 1870, having risen in the interval from 36 to 56 pence per inhabitant. These figures show very conclusively that while the condition of the masses is improving in Great Britain the same cannot be said of Ireland.

2. Food supply has been already alluded to, showing how much better fed are the people of the United Kingdom now than they were fifty or sixty years ago. The simple fact that we consume at present 110 lbs. of meat per inhabitant against 75 lbs., and 88 lbs. of sugar against 16 lbs., at the beginning of the Queen's reign, is sufficient evidence that the working-classes are not only on a better footing than before, but also than in other European nations.

3. Savings-bank returns show no less favourably, viz. :—

	Amount, £.	Depositors.	Per 1000 Inhabitants.
1850 . . .	30,100,000	1,060,000	39
1870	53,100,000	2,620,000	83
1895 .	143,200,000	7,970,000	203

It would be almost correct to say that every family in the United Kingdom has an account in the Savings-banks, since the number of depositors exceeds that of houses. Comparing depositors with

population in the three kingdoms we find in 1895 as follows:—

	Depositors.	Per 1000 Inhabitants.
England . . .	6,946,000	230
Scotland . . .	696,000	167
Ireland . . .	328,000	72

The number of depositors in Ireland is larger than might be expected, seeing the prodigious increase of pauperism in that country since 1870.

4. Life insurance returns throw a certain light on the condition of the middle classes, who represent the bulk of the business, and here again we have evidence of increasing prosperity. To go back only ten years, the figures for 1884 and 1894 compare thus:—

	1884. £.	1894. £.	Increase per Cent.
Premiums . . .	12,560,000	17,640,000	41
Funds . . .	151,500,000	205,400,000	35

The growth of life insurance since 1884 compared with that of population has been as 4 to 1.

5. House accommodation, as already shown, has improved so much during the present reign that the average value of each house in the United Kingdom is now £339 against £145 in 1841. Moreover, there are at present only 80 per cent. of the population living in houses rated at less than

£20 a year, whereas in 1841 that class represented 93 per cent.

6. Public libraries have multiplied all over the three kingdoms to such a degree, that the intellectual advantages within reach of all classes are of the greatest value. The first Free Library was opened at Manchester in 1852, and now there are 208 institutions of this kind.

Thus, from whatever point we view the condition of the masses in Great Britain, we see the most flattering changes since 1840, or even since 1870. The same, unfortunately, cannot be said of Ireland, which country has lost ground very remarkably since 1870.* Another shadow to the picture is the condition of the "slums" in our great towns. Professor Huxley says: "The inhabitants of the poorer quarters of London and other large towns are condemned to a mode of life far more degraded and uncivilised than that of any tribe of Western Africa."

The average Englishman thinks that he fulfils every duty towards the working-classes by paying poor-rates, subscribing to two or three charitable institutions, and leaving at his death a modest bequest to some hospital. As to those who live in towns, this is far short of what they

* See Mr. Charles Booth's comments on the Irish census of 1890, in his address to the Royal Statistical Society.

ought to do: there should be in every parish a local Benevolent Society to promote the decent housing of the working-classes of the whole city. Miss Octavia Hill has shown us how the work is to be done, and her example has had good effect in France: half-a-dozen capitalists at Lyons have built dwellings for thousands of operatives at minimum rents. The Peabody and Guinness buildings in London are to the same purpose. Such buildings cost from sixpence to eightpence per cubic foot, and suitable sites vary in price from two to five shillings per square foot, the capital expenditure for each person lodged being £36. It is, therefore, feasible to lodge 400,000 persons of the poorest classes in London at an expenditure of only 15 millions sterling, a sum which represents less than one month's earnings of the citizens—the rent of the rooms should not exceed two shillings a week. If private benevolence will not make a great effort in this way, not only in London, but in all cities over 50,000 population, the municipal authorities should have power to do it, since the evil to be remedied is one of alarming magnitude, and (apart from all sentiments of humanity) is alike injurious and disgraceful.

Hospital accommodation, one of the first requirements in a Christian and civilised community, is

very inadequately provided for. We have only 496 hospitals in the United Kingdom, with a total of 16,400 beds, which admit 145,000 patients yearly; while France, with even a smaller population, has 72,000 beds, admitting 438,000 patients every year. The number of sick in the United Kingdom on any day, according to Dr. Farr's theory, must be at present 1,400,000, and in order to provide accommodation for the necessitous—say one-tenth of all sick persons—we should have 140,000 beds, or nine times the actual number. So long as our hospitals have to depend (as they do) on endowments and voluntary contributions for support, their efficiency will fall far short of requirements. Wealth increases in Great Britain in the most marvellous manner, and there is no excuse for neglecting those duties of humanity which the poor and the sick have a right to expect from the community.

XVIII. SCIENTIFIC PROGRESS.

It was ominous of the progress of mechanical science in the Victorian epoch that a few months after the accession of Her Majesty the first steamer from Europe, the *Great Western* of Bristol, crossed the Atlantic, and Messrs. Cook and Wheatstone

invented the electric telegraph. Railways were just then coming into vogue, England having made the first, and other nations quickly followed her example. In fact, the present reign may be aptly termed the Railway Age, for there are in the world 444,000 miles of railway in traffic, whereas hardly 500 miles existed in 1837.

The Thames Tunnel was completed in 1843, after eleven years of labour, and was in those days regarded as one of the wonders of the world. Engineering science has since made such progress that it could be constructed now in six months. The first submarine cable was laid down in 1850 from Dover to Calais, and in 1865 the first Atlantic cable; at present there are 990 cables, with an aggregate length of 150,000 miles. So rapid has been the march of electrical science, that this new force is already in many respects supplanting steam. Electric light, which was first used in 1863, is everywhere taking the place of gas.

Improvements in machinery have occupied so much attention that great success has followed every effort in this direction. In our textile factories one operative now controls 90 spindles, against 29 in the year 1840. Moreover, the demand from foreign nations for British-made machinery is such that our exports under this head in 1896 amounted to £17,050,000, against £5,300,000 in

1870. Every year some new invention is recorded for saving labour, or rather for rendering each man's labour more productive, and thus more beneficial to himself and the community. We have already seen that each miner now raises a ton of coal daily, whereas in 1840 it took three men to raise a ton. At the same time we have made such progress in the building of steamboats that engines of modern construction consume about one-fourth of the fuel they would have required fifty years ago, since we get as much energy from 2 lbs. of coal as we did then from 7 lbs. There is likewise a great saving of fuel in the production of iron. In 1840 it took $3\frac{1}{2}$ tons of coal to produce one ton of pig-iron, and at present two tons suffice.

Bessemer's method of making steel, invented in 1855, has wrought a revolution in this branch of metallurgy: the saving which it produced to the British nation was estimated at 9 millions sterling per annum in 1885, and at 15 millions in 1895. It is within the fact to say that from 1855 to 1897 the nation has benefited to the amount of 260 millions sterling by his invention. Nor is it only Britain, but the whole civilised world that has reaped signal service, since the cost of steel has been reduced from £40 a ton in 1860 to 90 shillings in 1895. Siemens' inventions in steel,

electro-plating, &c., are only second in importance to that of Bessemer.

Engineering science received such an impulse from the Stevensons, Rennies, Brunels, &c., that the United Kingdom was too small a field for the energies of their pupils and successors. During the present reign we have seen great works carried out in the British Islands, such as the deepening of the Clyde, the harbours at Holyhead and Cardiff, the Menai Bridge, the new docks at Liverpool, the Severn Tunnel, the Forth Bridge, the Manchester Ship Canal, &c. ; and at the same time our engineers have made railways and bridges, docks and water-works, in every quarter of the globe. A mere list of the works done by our engineers in the two hemispheres since 1837 would fill a volume, and the money expended would reach a sum exceeding belief. Suffice it to say, that one British contractor, the late Thomas Brassey, had at one time an army of 230,000 workmen, a number that surpassed the total force of the conflicting armies at Waterloo. Our engineers and our contractors have been well paid for their labours, but this does not detract from the fact that such labours contributed most effectively to the welfare and progress of nations.

Science is probably seen to most advantage when her efforts are directed towards the saving of human life, and in this way much has been

done in the last half-century, both by land and sea. In the decade ending 1860 the number of miners killed yearly was equal to 4 per thousand (4.1) of those employed, whereas in the decade ending 1890 the ratio has fallen to 2 per thousand: this is equivalent to a saving of the lives of 120 miners yearly, the number employed in 1895 reaching 590,000 under ground. The loss of life among colliers since 1886 has been less than one man killed for every million tons raised, whereas in the period from 1851 to 1870 it averaged one killed for 350,000 tons; judged by this standard the saving of life is over 300 miners yearly. Owing to the advance of medical science we have to record improvements of the most valuable nature to society. Dr. Simpson's invention of chloroform in 1847 has been of much service in midwifery and surgical operations; thanks to it and other causes of less note, the ratio of deaths in childbirth in the London hospitals has declined 48 per cent. since 1860: this is equivalent to the saving of 1400 mothers yearly in England. Still more remarkable is the saving of life in surgical cases from the Listerian antiseptic system introduced by Professor Lister of Glasgow in 1867. Before that time the average mortality after cases of amputation was 40 per cent., but now it is between 4 and 6 per cent. Professor Schede says that Lister's invention has reduced mortality

in such cases from 30 per cent. to 4 per cent., but Bugnot shows that under the old system the death-rate after amputation in the Paris hospitals (1841-46) was 40 per cent. It may therefore be said that where 10 persons formerly died under such operations, only one dies now since the Listerian invention.

We have also happily to record a remarkable saving of life at sea in recent years, from the multiplication of lifeboats and lighthouses* at exposed points of our coast. The British Islands count 880 lighthouses, against 260 in the year 1830, and about 10 new ones are built yearly. We have more than France and Germany put together, and one-third of the total number in Europe. The loss of life from British vessels has diminished, while our trade on sea has increased, viz. :—

Year.	Shipping, Tons.	Annual Loss	
		of Life.	Per Million Tons.
1871-75 . .	6,100,000	2,350	386
1890-94 . .	8,460,000	1,805	213

If the loss of life were the same in ratio to shipping as twenty years ago, the average for the last five years recorded would have been 3280, or nearly double what it has been. Our Lifeboat Service is

* As well as from the Plimsoll Act, mentioned hereafter.

an institution of which we have reason to be proud, having saved 30,000 lives in the last sixty years. There are 303 lifeboat stations in the United Kingdom, manned by 13,000 volunteer seamen (of whom only the cockswains are paid), and maintained by voluntary contributions at a cost of £45,000 yearly.

XIX. LEGISLATIVE PROGRESS.

Our whole system of legislation has undergone complete reform during the present reign. In 1837 there were thirteen kinds of crime subject to capital punishment, no fewer than 671 persons having been condemned to death in twelve months; but the accession of the young Queen was coincident with a more humane code and the abolition of the pillory. Since then only 990 criminals have been executed, and these mostly for murder, an average of 17 executions yearly. In 1840 an Act was passed for the protection of chimney-sweeping boys, among whom death from suffocation had been frequent. At the same time came into force the Vaccination Act, which has reduced smallpox mortality 75 per cent. The law prohibiting women from working in mines was passed in 1842, and two years later the Factory Act promoted still further the interests of humanity by preventing

the ill-treatment of operatives, especially women and children.

Sir Robert Peel's abolition of the Corn Laws in 1846 was a statesmanlike measure, giving cheap bread to the people and opening an era of commercial and manufacturing prosperity to Great Britain, while it has proved injurious to Ireland. The repeal of the Navigation Laws in 1849 was another great stride, apparently in advance of the age, for it is remarkable that the Liverpool ship-owners subsequently petitioned Parliament to reimpose them. Penalties on light and cleanliness had long existed in the form of Window Tax and Soap Duties, which were removed in 1851-53. A better treatment of lunatics was introduced, and a check put to the usual brutality in private asylums. Although a free press formed part of our Constitution, the duties on newspapers and on advertisements were an effectual bar to progress until their abolition in 1851-55. A number of other taxes were removed about this time, but by an error of policy the Income-tax was extended to Ireland in 1853, ere that country had begun to recover from the disastrous famine of 1847-48, and in spite of Sir Robert Peel's previous declaration that it would be unwise and unjust to increase Irish taxation. In 1857 was created the Divorce Court, which has proved a national calamity in Great Britain: although

imposed on the people of Ireland against their will it has happily proved a dead letter in the island.

The ensuing decade began well (1861) with the abolition of imprisonment for debt and the repeal of the duty on paper. So oppressive was the latter as a tax on knowledge, that Charles Knight in printing his Encyclopedia paid £20,000 for paper duty, and in this manner lost the whole profit that would otherwise have resulted from the work. Thanks to the removal of so iniquitous an impost we have now cheap newspapers and magazines, and the masterpieces of English literature have found their way into the homes of the working-classes. The Reform Act of 1866 extended the franchise and doubled the number of electors in the United Kingdom.

Competitive examination was introduced in 1870, throwing open most branches of the Civil Service to persons of all ranks in society. The Education Act of the same year created the School Boards, which have now so large a share in public instruction. Army reform came with 1871, and the old system of purchasing commissions was abolished. The Plimsoll law against overloading vessels was passed in 1875, and to this is partly, if not mainly, due the reduction of 45 per cent. in the ratio of loss of life at sea as compared with tonnage in the last twenty years. No less beneficent in its intention

was a bill passed in 1876 for improvement of Artisans' Dwellings, to pull down unhealthy tenements and construct buildings of the Peabody type ; but it has proved more a name than a reality, because we often see that the most loathsome tenements are the property of persons of local influence.

Since 1880 agrarian legislation for Ireland may be said to have engrossed the attention of Parliament, and in some respects matters have been improved in that unfortunate country by securing tenants from confiscation, and carrying out most of the recommendations of the Devon Committee (1844), which, if then adopted by Parliament, would have spared us half a century of turmoil.

In looking back through the last sixty years, there is nothing more satisfactory than our steady amelioration in fiscal matters. When the Queen ascended the throne the Customs-tariff contained 1200 articles subject to import duty ; at present the number is reduced to ten. In 1837-40 the amount levied by import dues was equal to 17 shillings per inhabitant, or 70 per cent. more than at present, and as such dues fell mostly on the working-classes they aided powerfully in the increase of pauperism. If experience proves anything, it is that as we reduce taxes on food we diminish the ratio of paupers to population. Perhaps before long Parliament may see the wisdom of removing

the tea and coffee duties, which produce at present £3,900,000: instead of them it would be advisable to increase the taxes on carriages, livery servants, and horses kept for hunting or recreation. Another fiscal reform much needed is the abolition of Income-tax in all cases where the earnings cease with the individual's life and are less than £800 a year. The struggling physician, engineer, painter, or poet is at present taxed the same, if he earn, for example, £500 a year, as a man whose income is from real estate and passes at his death to his family. This is a manifest injustice, perhaps explained by the fact that the bulk of our legislators consists of estated men; if the proposed exemption were carried out it would be necessary to increase the Income-tax upon those who own property. Meantime we see that the congestion of wealth in estates over £5000 passing through the Probate Court (see page 60) is increasing at such a rate as to make us pause and feel anxious.

There has been a healthy extension of the franchise, which was very restricted at the beginning of the reign, viz.:—

Year.	No. of Electors.			Per 1000 Inhabitants.
	Borough.	County.	Total.	
1846 .	445,000	622,000	1,067,000	38
1881 .	1,879,000	1,198,000	3,077,000	88
1895 .	2,540,000	3,793,000	6,333,000	160

The representation of the people, so far as the power of electing members of Parliament goes, has quadrupled in fifty years, and has almost doubled in ratio since 1881. Strange as it may appear, the people of Ireland take less interest in politics than those of Great Britain, if we are to judge by their use of the franchise at the general election of 1895, viz.:—

	Electors.	Voted.	Percentage.
England . .	4,960,000	3,726,000	75·2
Scotland . .	636,000	466,000	73·4
Ireland . .	737,000	395,000	53·6
Total .	6,333,000	4,587,000	72·4

For every 100 inhabitants in 1895 there were 12 persons who voted in England, while the ratio of voters to population was 11 per cent. in Scotland and 8 in Ireland.

XX. THE COLONIES.

At the Queen's accession the only Colony of first-rate importance was Canada; but since then the progress of the British Colonies has been one of the most striking features of the nineteenth century. It may appear, therefore, strange to say that the growth of Canada and Australia has fallen far short of what it might have been, if British statesmen (from 1840

till 1870) had known how to turn the tide of emigration to our Colonies. More than 70 per cent. of our emigrants have gone to the United States, for two reasons chiefly: first, that the cost of passage was less; secondly, because the American Government gave free farm lots of 160 acres. On the other hand, the system in our Colonies (until recently) was to let public lands at one penny per acre to men of large fortune on squatter leases, and thus prevent industrious settlers from cultivating the soil. Hence it may be said that our colonies have advanced in spite of the folly, not because of the wisdom, of British statesmen. In fact, their real progress dates from the period of their emancipation from the tutelage of Downing Street.

The Dominion of Canada was established in 1867, after which time a liberal system of land legislation was introduced, with the result that the Colony has progressed favourably and is in a prosperous condition. To show the progress of twenty-five years we have the following figures:—

	1871.	1895.	Increase per Cent.
Population .	3,640,000	5,050,000	38
Grain crop, tons .	2,080,000	5,020,000	140
Manufactures, £ .	46,000,000	98,200,000	113
House-property, £ .	48,600,000	112,000,000	130
Revenue, £ .	3,400,000	7,000,000	106
Commerce, £ . .	39,500,000	46,200,000	17

In everything except commerce Canada has made remarkable progress in a quarter of a century; but for the insane tariff regulations, imports and exports would have increased in the same degree as agriculture and manufacturing industry. Tillage and pastoral industry have grown with such rapidity, that in 1894 the farms represented a value of 305 millions sterling against 125 millions in 1861. These farms cover an area of 35 million acres—that is, about the size of England, the last census showing (as compared with that of 1881) that the farming area increases by 1,400,000 acres yearly. Even at this rate it will take seven hundred years to settle the fertile portions of the Dominion, for, as Lord Brassey says, “In Manitoba you may drive a gig for a thousand miles straight over open prairie suitable for wheat-growing.” The western provinces are, meantime, being opened up by railways, of which Canada possesses 16,000 miles, built at a cost of 186 millions sterling. The merchant navy has more than quadrupled during the present reign, having an actual carrying-power of 1,580,000 tons, against 365,000 in 1841. In fine, the importance of Canada may be shown by the fact that the value of real estate, which was estimated in 1830 by Sir Henry Parnell at 60 millions, now reaches 342 millions sterling.

Australia has seen her population multiply twelve-

fold in the present reign, rising from 350,000 in 1837 to 4,240,000 in 1895. The city of Melbourne is typical of Australian progress. In 1837 it comprised "a wooden church, two wooden inns, three wooden shops, twenty wooden huts, and a market supplied with kangaroo meat." To-day Melbourne and Sydney are among the best-built and best-regulated cities of the world. The growth of the Australian Colonies since 1860 is shown as follows: —

	1860.	1895.
Trade, £	50,200,000	114,900,000
Revenue	5,800,000	28,600,000
Debt	10,700,000	218,600,000

The increase of debt is at times commented upon unfavourably, but is in reality identified with the growth of Australia, railways and other public works representing an outlay of 133 millions sterling. If the value of these works, which are all State property of a productive character, were deducted, the debt would be only 85 millions sterling, equal to 8 per cent. of the aggregate wealth of Australia, the ratio of national debt to wealth being 6 per cent. in the United Kingdom and 12 per cent. in France. Hence it is clear that the Australian debt is not of an alarming character. The growth of this group of Colonies has been almost wholly

due to gold and to wool, the production of which showed as follows:—

Period.	Millions £.			Per Annum.
	Gold.	Wool.	Total.	
1851-60 .	118	48	166	£16,600,000
1861-70 .	95	102	197	19,700,000
1871-80 .	81	184	265	26,500,000
1881-90 .	48	208	256	25,600,000
1891-95 .	37	112	149	29,800,000
Forty-five years	379	654	1,033	23,000,000

Australia will soon have more miles of railway than the Mother Country, the actual length exceeding 13,000 miles (of which 10,000 have been made since 1873), and new lines being constructed at the rate of 500 miles yearly. So rapid has been the accumulation of wealth that it was estimated by Coghlan in 1888 at 1136 millions sterling, as compared with 26 millions in the year 1838: this was an average increase of £22,200,000 per annum, equivalent to £15 per inhabitant on the mean population, against £8½ per annum in the United States and £4 in the United Kingdom. Thus it may be said that one Australian accumulates as much wealth yearly as two Americans or four Englishmen.

The other Colonial possessions have likewise

made great progress during the present reign, but in much less degree than Australia or Canada, which are offshoots of our own people, while the other Colonies are strictly possessions, the bulk of the population being alien.

It may gratify the ambition of some to see that in recent years, by means of Maxim guns, the territorial possessions of Great Britain have been vastly extended in South Africa. Such possessions can never be other than a source of weakness, whereas Colonies (peopled by men from the British Islands) serve to increase the prestige and commerce of the Mother Country. While British statesmen devote extraordinary attention to matters connected with Mashona-land, Bechuana-land, Matabele-land, the swamps of the Orinoco, the jungles of Upper Burmah, &c., we see Ireland undeveloped, undervalued, and lamentably misunderstood. More can be done to strengthen the United Kingdom by seeking to improve the condition and industries of Ireland than in any other way.

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A. M. D. G.

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PUBLISHED BY

MESSRS. GEORGE ROUTLEDGE & SONS,

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INDUSTRIES AND WEALTH OF NATIONS.

LONGMANS, GREEN & CO.,
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1896.

OPINIONS OF THE PRESS.

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From "Banking and Insurance," Jan. 1, 1897.

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From the "Birmingham Gazette," Dec. 23, 1896.

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From the "Dundee Advertiser," Dec. 17, 1896.

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parative wealth of the different nations in the world, leaving the application of these figures to writers on special subjects. It would be, of course, impossible to test all the statistics which he has supplied; but we have taken several and compared them with official returns, and in every case have found him accurate and precise. The plan of the book is simple and comprehensive. He takes the twenty-one great nations of Christendom in succession, and gives details of each in separate sections under the headings of population, productive energy, agriculture, fisheries, textile manufactures, hardware, mining, means of transport, commerce, earnings, wealth, taxation, debt, and other minor particulars. The comparative statistics are very intelligibly displayed by a series of excellent diagrams, graduated in such a manner that the position of the various countries in relation to the subject discussed may be apprehended at a glance. . . . In this way the author shows the productive energy, value of manufactures, proportion of minerals, shipping, railways, and other subjects suitable for comparison; and these diagrams are more likely to be imprinted upon the memory than a mere incoherent array of figures. . . . Mr. Mulhall's volume will prove of great value to the student of political economy and of the comparative history of the industries of the world."

From the "Sheffield Telegraph," Jan. 27, 1897.

"Mr. Mulhall, author of 'The Dictionary of Statistics,' has compressed into the present volume an amount of statistical information on the world's wealth, and the industries employed in its production and distribution, which is alike surprising and invaluable. By the help of ingeniously-contrived diagrams we can see at a glance the relative positions of the various nations included in the survey, both as regards their capability and as regards their actual achievements. There are over thirty of these diagrams, which form one of the most interesting features of the book, and the letterpress is packed with tabulated details which bear upon all branches of the subject. The various nations are treated severally and independently. The whole is summed up in a series of 'Comparative Tables' and an appendix. . . . There is besides an excellent and minute index of thirty-four columns, which makes the

book perfect as a work of reference. . . . It is a very thorough and conscientious piece of work, and all who are interested in commerce will do well to procure the book, and study its contents."

From the "British Review," Dec. 19, 1896.

"This is not only a very useful, but a singularly interesting book; and will be found to be so by even the ordinary reader. . . . Statistics are generally neglected on two different grounds—one that they are dry; and the other, that they can be made to prove anything. As to the allegation of dryness, Mr. Mulhall writes so lucidly, that in the present case, at all events, he has rendered it undeserved. As to the idea that statistics can be made to prove anything, Mr. Mulhall will be found to have likewise disposed of that. . . . To show the reader the precise degree of certainty which is to be attributed to such estimates as are in any degree speculative, Mr. Mulhall explains in the clearest manner possible the principles on which the computations are made. For instance, he explains that when in estimating the wealth of a country, land is set down as worth such and such a number of millions, 'it is capitalised at thirty times its assessed annual value.' Some statisticians may object to this method; but if it is applied to all countries alike, capitalisation at thirty years' purchase will, for purposes of comparison, yield a result as trustworthy as capitalisation at twenty-five.

"The book is divided into twenty-three chapters, each of which, with the exception of the two first, is devoted to setting forth statistically the resources of a separate country, beginning with the United Kingdom, and ending with Argentina and Uruguay. The principal details given in each case are as follows:—the number and density of the population, the amount of emigration and immigration, the amount of steam-power and horse-power, the agricultural acreage and agricultural yield and agricultural rental per acre, the manufactures, the minerals, the commerce, the house-rent, the occupations of the people, the distribution of estates and incomes, and the total or totals of such items. . . . All these points have admirable diagrams to illustrate them. . . . The first diagram shows at a glance the relative riches of the principal countries of the world, estimated by the amount of capital which a division would give each

inhabitant. Of all countries, the richest is England. If this is expressed as 330, Scotland comes next as 260, Australia third as 255, France fourth as 254, and fifth, the United States as 238. The proportion of taxation to income is illustrated by a diagram equally instructive. The first fact which a glance at it will make clear to the reader, is the fact that of all nations the most heavily taxed is Italy. The upright line representing Italy's burdens tower like a tree above those representing the burdens of the others. . . . Great Britain, in proportion to its wealth, is the most lightly taxed nation in Europe, her burdens, as compared with those of Italy, being only in the proportion of $6\frac{1}{2}$ to 19. Perhaps even more interesting at the present moment are Mr. Mulhall's tables of the relative commerce of nations. . . . The United Kingdom towers over all other rivals in the magnitude of her commerce, just as Italy does in the magnitude of her taxation. If the commerce of Great Britain is represented by 680, that of Germany, which comes next, will be represented by 340, and that of France by 280; whilst if the increase of the commerce of Germany during the past thirty-four years be represented by 120, the increase of the commerce of the United Kingdom will be represented by 320. . . . Here, again, is a fact full of significance in connection with many problems. 'Forty per cent. of the working power of the world is now used for production, sixty per cent. for distribution, which is precisely the reverse of the ratios in 1840.' But we must bring our examples to an end. They are but examples, chosen almost at random, from a work which is filled with others of similar and equal interest. To the politician, the economist, the sociologist, and to the merely curious reader, the best advice we can offer is to buy Mr. Mulhall's book; and if they do not care to read it through, to keep it by them for reference."

From the "Review of Reviews," Jan. 15, 1897.

"Probably the most notable book of the month is one which will have the fewest readers. Statistics do not appeal to the majority of mankind. Nevertheless, Mr. Mulhall's 'Industries and Wealth of Nations' is a book which every one who is interested in the progress of the world should read and take to heart. Mr. Mulhall has taken an infinite amount of labour in compiling and classifying

the information he has collected, and enables us to form some idea of the immense revolution which has been wrought within the last sixty years. . . . Tracing back the forward movement to its cause, he finds that it commenced at the time of the revolution of 1848, when most of the sovereigns of Europe were compelled to give heed to the spirit of liberty. This sense of liberty, reinforced by the discovery of steam and electricity, is, he thinks, the cause of the rapid development of the Christian nations. Population has increased by leaps and bounds. Never has there been a period in which the people have multiplied so rapidly as in the last sixty-five years. Mr. Mulhall draws our attention to three very remarkable circumstances connected with this unprecedented development of population. The first is the scattering of the people over the face of the globe. Europe has increased its population by 62 per cent., but at the same time 30 millions of its inhabitants have emigrated to other lands. . . . The second striking fact is the rapid growth of cities and towns. The gravitation of the rural population to the towns seems to have been universal. The result is that cities show an increase of 470 per cent. in sixty years as against an increase of only 70 per cent. outside the towns. . . . The third great fact which stands out clear and distinct is the rapid extension of the English-speaking race. In 1831 English was spoken by 35 millions; now it is spoken by 120 millions. . . . But it is not only in language that the English-speaking man is at the top of the tree. He is first in almost everything. A glance at Mr. Mulhall's very interesting diagrams shows this clearly enough. Whether it is in wealth, energy, steam-power, manufactures, mineral wealth, commerce, shipping, railways, or earnings, it is the same story—first comes the United Kingdom or the United States, then the colonies, while the rear is brought up by the European nations. If liberty scattered the human race over the face of the earth, it was the discovery of steam which rendered the dispersion possible. It has more than doubled the working-power of every person; that is to say, five men can now do as much as eleven could fifty years ago. At that time steam-power was in its infancy; now it is equal to the force of the men and horses of all nations. Naturally this has caused a marvellous change in the industries and habits of civilised races. A most interesting point which Mr. Mulhall makes clear is that whereas formerly power was chiefly used for production, it is now

principally utilised for distribution—that is, for the conveyance of passengers and merchandise. . . . The book presents us the bright side of the industrial progress of the last sixty years.”

From the “New Saturday Review,” Jan. 30, 1897.

“When Mr. Mulhall’s name figures on a title-page the reader needs no further guarantee for what is contained in the book. Not to mention the author’s ‘Progress of the World’ and ‘History of Prices since 1850,’ there is his ‘Dictionary of Statistics,’ which is unique in literature. In the volume under notice the author apologises for not having been ‘deterred from taking it in hand’ by ‘the conviction that this task could have been better accomplished by some one else.’ That ‘some one else,’ we venture to believe, has yet to be discovered. There are none too many who find it ‘delightful’—as our author confesses he has done—to devote years to the task of ‘bringing into a narrow compass the result of the labours of hundreds of able writers, whose works are not accessible to the general public.’ The product of this patient effort is a clearly-printed, convenient handbook of some 450 pages, in which are compressed all the most valuable economic statistics of Europe, the United States, Canada, Australia, South Africa, Argentina, and Uruguay. . . . After an explanatory introduction, our author gives us a clear and singularly interesting compendium of the industries and wealth of the ‘Nations of Christendom’—an essay, in fact, in comparative statistics. The figures start from dates early in the century, and the principal heads under which the facts are gathered are—population, energy (or working power, vital and mechanical), agriculture, forests and fisheries, manufactures, mining, transport, commerce and shipping, railways, banks and money, earnings and wealth, finances (public revenue and expenditure), and food supply. Then follow similar chapters devoted to the nations severally; and nearly a hundred pages at the end of the volume are devoted to a set of tables upon which the whole scheme of the book is based, a copious appendix, and a full index. A valuable feature in the book is the series of thirty-two ingenious diagrams, which show at a glance many of the more important results arrived at in the text, and aid the student in acquiring vivid and precise notions. Thus, on one diagram the urban and

rural populations of nine countries in 1891 are compared by means of white and shaded squares, and the student can see at a glance that the United Kingdom stands alone in Europe in possessing an excess of urban population over rural. A similar diagram gives the proportions in which the populations of the same countries are engaged in agriculture, manufactures, and commerce, &c. . . It is unnecessary to insist upon the value of such a compilation to both theorists and practical men of all classes. One is fain to linger over its pages, if merely for the sake of the curious facts that it discloses and the puzzling questions it suggests. Why should the preponderance of females over males have diminished during the last thirty years in both Scotland and Ireland—despite the emigration from Ireland—and increased in England? Why should there now be resident in the United States, Australia, and Canada as many Irish as British, though during the last half-century a million and a half more British than Irish have emigrated to those countries? A curious fact, the significance of which deserves studying, is that fortunes over £5000 are multiplying much faster than fortunes under £5000. It is interesting to note that the ratio of taxation—national and local—to the total earnings of a country is lower in the United Kingdom—8·6 per cent.—than in any other country in Europe. . . . The book owes much of its attraction to the fact that it is by no means merely a collection of figures: the figures, except in the appendix, are arranged in the form of short tables embedded in a lucid and copious explanatory text. Thus the author, as it were in person, accompanies the student all the way through, and gives to the pages the vivid interest of a *viva voce* lecture by a fully-equipped professor. Though the author certainly cannot claim originality as to figures, the public will prize very highly the originality he has displayed in his arrangement and elucidation of the figures.”

From the “New Ireland Review,” Jan. 1897.

“Pythagoras maintained that the ultimate constituent elements of all things were numbers. To be a statistician in the true sense of the word one must share, in some measure, the faith of the philosopher of Crotona. Mr. Michael Mulhall has this qualification, and his devotion to figures has something of a religious enthusiasm.

One has need of a special mental temperament to find, as he does, the delight of years in handling columns of figures. But if there were not some people so endowed by nature, we should not have statisticians worthy of the name. Mr. Mulhall's new book on the 'Industries and Wealth of Nations' is an extended inquiry, a monument of patient labour, and a treasure-house of knowledge which has now become indispensable."

From the "Liverpool Post," Dec. 26, 1896.

"To the average man the bare mention of statistics seems something formidable. Mr. Michael G. Mulhall, however, revels in statistics, and gives practical demonstration, in his 'Industries and Wealth of Nations,' of the fact that the study of national wealth and industry may afford interesting as well as instructive reading. His work is a vast storehouse of information carefully and systematically classified. Its great value is that it presents a picture not of one country only, but of all, and not in one department of national industry and commerce only, but in every one of them, and this, too, in a manner that brings out the degree of comparative as well as of actual progress."

